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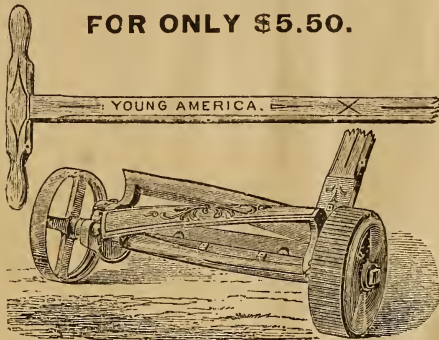
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A few hybrid queens for sale, at 25 cents each.
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3-24db

COLONY in 10-frame hive, \$5.00; tested queens, \$1.50; untested queens, 75 cts.; 2-frame nucleus, \$1.50; 3-frame nucleus, \$2.00 (no queen). I have Italian bees; size of above frame, 9 1/8 x 17 1/2. 14tfdb **OTTO KLEINOW, Detroit, Mich., (Opp. Fort Wayne Gate).**



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Vol. XIV.

AUGUST 13, 1886.

No. 16.

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THE WAX QUESTION.

HOW MANY POUNDS OF HONEY DOES A POUND OF WAX ACTUALLY COST US?

THE beautiful agreement of authorities, that it requires twenty pounds of honey to make one pound of wax, is not, I believe, owing to a concurrence of experiments. The experiments often indicate much more than that—100 to 1 sometimes. The authorities concur that 20 to 1 is about all we can be got to believe, and so state it at that. The fact seems to be, that no experiment of this kind is worth a rye straw unless the bees have their entire liberty, and are at work on natural supplies in a perfectly natural way. It is difficult to grant them this much, and at the same time weigh things as accurately as exact science relishes; but there is no help for it. Truthful approximations are better than exact figures that begin and end in utter falsehood.

That the prevalent doctrine is an utter falsehood, might be readily inferred from the way bees treat wax after they get it secreted. Much of it is at times dropped to the bottom of the hive, and blown out as worthless litter. The scales in which it is formed seem quickly to get a little dry and stiff, and they prefer to secrete fresh ones. Now, the bee is, by nature, a miser—and 20 to 1 is somewhere near the present ratio of silver to gold. When you can find a miser who will pinch the silver coins till they squeak, and at the same time throw the gold coins on the floor, and sweep them out into the street, then you may look for a bee that will be equally wasteful of his resources. True, the bee can not reason about the matter; but the developments of nature, and the ultimate con-

clusions of reason are usually in accord. That is, nature has already reached the point where reason, after floundering about, and making all the mistakes possible, will finally come to rest. We can deduce the same thing again by this little simple experiment: Expose a section of nice comb-honey. The bees, if not otherwise engaged, will carry the honey away with an eagerness that amounts almost to frenzy. But how about the delicate comb, worth twenty times as much as the honey, weight for weight? The bees are perfectly capable of carrying home the comb, and have been known to do so as an occasional eccentricity; but ordinarily they can not be made to take it.

Now for the experiment which you requested me to write up: July 4th, 1885, a good but rather small prime swarm of bees was hived on a delicate scale which will weigh ounces, in order that their income and wax product might be estimated as closely as possible. The swarm weighed just three ounces less than four pounds, and was hived about sundown. During the night they decreased in weight two ounces. The average decrease in weight at night during the experiment was about twice this, or four ounces per night.

The plan of the experiment was to let them work undisturbed four days (as long as they could without eggs hatching), and then to cut out the products of their labor, weigh the amount cut out, render the wax, and weigh that. From these data a ratio can be approximated. After this they were to be undisturbed four days more, and then be fleeced again. Then a third trial of the same period was to be put upon them, after which the experiment was to be closed. The colony was weighed every morning and night.

This plan leaves several things not quite positive. How about the honey they had in their sacs to commence with? A four-pound swarm may have over a pound of honey. At other times they have only a very few ounces. This swarm evidently had a small supply, as they weighed seven ounces more after the first cutting was made than they did the morning after hiving. At any rate, the honey they had in their sacs at the close of the experiment offsets what they had to begin with; and I make an allowance in the separate trials for the change in the weight of the bees. Did they have any wax already secreted? I think not. The evidence is that they did better the second trial than they did the first. I make no attempt to estimate the daily mortality. The usual loss of a colony for 12 days, according to the authorities, should be about one-fourth of the original weight; but the fact that this colony weighed the same at the close that it did in the beginning shows that the mortality was not a pound of bees, nor any thing like it. Perhaps mortality does not become heavy until there is brood to feed. Some honey gathered at morn is eaten and dissipated before night, and so escapes the scale, while the wax product of it remains. To balance this on the other hand, all these pounds and ounces are pounds and ounces of rather raw nectar, not of ripe honey. As to the amount of honey used as food at night, a colony rearing brood rapidly uses seven ounces per night; an active colony not rearing much brood, from one to three ounces; a colony in a quiescent state, only a fraction of an ounce. During this experiment there was an average loss by night of 4 ounces. I have assumed that one-half of this was waste caused by vitality and muscular action, and one half the chemical waste of elaborating wax.

FIRST TRIAL.

First day's gathering of honey and pollen, 6 oz.; 2d, 13 oz.; 3d, 8 oz.; 4th, 16 oz.; total, 43 oz. Subtract from this—Honey and pollen cut out, 19 oz. Four days' food, 8 oz.; increase of honey in sacs, 7 oz.; total for subtraction, 34 oz.

Remainder, or amount spent in secreting wax, 9 oz. Weight of wax, 2 oz. 10 dr. Honey spent in making 1 oz. of wax, $3\frac{1}{2}$ oz., nearly.

SECOND TRIAL.

First day's gathering of honey and pollen, 0; 2d, 12 oz.; 3d, 11 oz.; 4th, 25 oz.; total, 48 oz. Add also 6 oz. decrease of the amount in their honey-sacs. Corrected total, 54 oz.

Subtract from this—Honey and pollen cut out, 35 oz.; 4 days' food, 8 oz. Total for subtraction, 43 oz. Remainder, or amount spent in secreting wax, 11 oz.

Weight of wax, 4 oz. Honey spent in making 1 oz. of wax, $2\frac{3}{4}$ oz.

THIRD TRIAL.

First day's gathering of honey and pollen, 5 oz.; 2d, 5 oz.; 3d, 22 oz.; 4th, 16 oz.; total, 48 oz. Add also 1 oz. decrease of the amount in their honey-sacs. Corrected total, 49 oz.

Subtract from this—Honey and pollen cut out, 33 oz.; four days' food, 8 oz. Total for subtraction, 41 oz.

Remainder, or amount used in secreting wax, 8 oz.

Weight of wax, $3\frac{1}{4}$ oz. Honey spent in making 1 oz. of wax, $2\frac{1}{2}$ oz., nearly.

It will be seen that the average of the three

trials gives very nearly the ratio of three to one. Perhaps a less mincing summary would hit the average reader more forcibly. Here are bees that made almost ten ounces of wax. *The books say that they must have had over twelve pounds of honey to do it with, while in fact they were allowed to keep just three pounds and a quarter.* Quite a discrepancy, is it not?

It does not follow that we are going to produce big crops of wax at a profit right away. There is another difficulty to surmount. I have twice run a good colony the whole season for wax, and so I have a right to know. After 10 or 15 days of wax-secreting, bees seem unable to secrete much more; and how to get the new supply of young bees promptly, without stopping the wax secretion of the first set, is the problem. E. E. HASTY.

Richards, O., July 6, 1886.

Friend Hasty, the facts you give us are astonishing, to me at least; at any rate, your experiment is certainly a very valuable one. It appears to be all right, but perhaps there may be something you have overlooked in it, after all. I am very glad indeed to be able to submit it to the keen intelligence of the readers of GLEANINGS. How is it, friends? Has Hasty made any big mistake in this matter? You say you ran a good colony the whole season for wax; why do you not tell us right here how much wax you got? I have for some time felt that there must be a mistake about the 20 lbs. of honey for one of wax, because of the quantity of wax single colonies have sometimes furnished. Now, then, who will tell us how we shall go to work to produce wax at a profit? Can we do it by feeding sugar? I have noticed the lavish way in which bees sometimes seem to kick around their scales of wax. It has, however, been, as a general thing, after I had been feeding them and got them a little out of their natural and normal condition.

DESCRIPTION OF BEES, QUALITY OF QUEENS, ETC.

FRIEND DOOLITTLE'S EXPERIENCE IN TESTING THE DIFFERENT RACES.

I HAVE been besieged of late by some parties in Pennsylvania to write an article for GLEANINGS on the qualities of different races of bees, color of queens, and the quality of queens reared by natural swarming as compared with those raised "artificially," as it is termed. I wrote the parties that, as I was a queen-breeder, I did not think friend Root would care for my views on these subjects for GLEANINGS, for it might look as if I had an "ax to grind;" but this does not pacify; an article they must have, so I have consented to try a rather difficult task, for I know that few if any will agree with me on all the points. However, I shall try to give an impartial article, telling just what I believe to be the truth. First, then, we have the

QUALITIES OF THE DIFFERENT RACES.

The black, or German bee, probably all are familiar with. All the really good qualities I know of them is their readiness to enter the sections and build comb, and smooth white capping of the honey in the same. Their poor qualities, as I find them, is their inclination to rob, and willingness to be

robbed; their running from the combs, and out of the hive, unless handled very carefully; do not resist the wax-moth; are poor honey-gatherers, except in times of plenty; inclined to sting with little provocation, and do not do work in a business-like way. This last particular I do not know that I ever saw mentioned; and by it I mean that they live only from hand to mouth, as it were, calculating only a day or so in advance. They go into the sections to work, and build comb only so long as honey comes in plentifully. The least slack stops comb-building, only that the cells are lengthened on that already built, so that I have frequently found sections one-fourth full of comb, and that one-fourth lengthened out, filled, and capped over without being attached to the sections except at the top. I never saw any thing of the kind with any other race of bees, for they all start and build the sections full of comb as if they calculated to do something business-like. If another yield of honey comes in a few days, these bees start the comb down a little further, when it is again stubbed off if the flow slackens, and again and again do the same thing until I have counted as many as five times in a single section where they have started and stopped, making the face side of the comb resemble a washboard. It has been claimed that there is a difference in these bees, some saying that there is a large *brown* bee of superior merit; others claim great things for their *gray* bees, both of which are said to be a great way ahead of the *little black* bee; but I wish to say, that, after getting queens from several claiming to have these superior strains, and placing them beside the "little black bee" our forefathers used to have, there is not a bit of difference in them so far as I can see, or any of my bee-keeping friends to whom I have shown them. Well, I must "curtail" or I shall not get along very fast.

I have thoroughly tried the Syrians; and for this locality I consider them the poorest of all the bees yet brought to this country. The two great faults which make them thus are, first, not breeding when they should breed, and then breeding beyond measure when they ought to breed but little, which results in few laborers in the field in the honey-harvest, and countless numbers of consumers after the harvest is past, to eat up all that the few gathered. Consequence, *no profit*. Second, the workers begin to lay eggs as soon as the queen leaves the hive, whether by swarming or otherwise, so that the combs are filled with a multitude of dwarf-drones, to the disadvantage of bees, combs, and owner. Fertile workers are always present with these bees. At times they sting fearfully; at other times they are nearly as peaceable as Italians. However, they will not venture an attack unless the hive is disturbed, as do the black bees. A colony of Syrian or Cyprian bees will let me stand an hour at a time right in front of their entrance, turning out for me, and not once offering to sting; while in less than two minutes a black colony will resent such impudence to the score of hundreds of stings, if you don't leave. The Cyprians, I dislike to part with, for they are really a good bee in all points but one; but that *one point* is altogether too sharp for me. Of all the bees to sting when provoked, this bee "beats all." My flesh fairly crawls as I write, to think how I have been stung by them. In opening a hive, smoke does no good, while the least mishap will, without warning, send hundreds of hissing, angry, biting, stinging bees all over you. They also have

"a touch" of the laying-worker nuisance, but nothing like as bad as the Syrian. I still have a colony of Cyprians, which I expect to brimstone this fall. I have twice tried to find the queen this season, to supersede her, but have been stung so that I gave it up. Perhaps brimstone won't kill them; but I'll try it and see.

The Carniolans, so far as I have tried them, are a rather mixed race or only a very peaceable strain of the black bee. My trials of them agree exactly with what friends Root have said of them in late numbers of GLEANINGS. Some of the queens produce a hybrid progeny, while others give nothing but black bees. As to the "steel blue" color claimed for them, I will say that the same will be seen on a lot of black bees, just hatched, if held so the light strikes them just right. As far as I am concerned, I have no use for them. It is hardly necessary for me to say that the Italians (home bred) are my choice, and especially as I find them now, after we have passed through almost the poorest honey season we have ever had, at work on red clover, and storing honey from it in sections, while hybrids and other bees are scarcely getting a living. This one quality alone, of home-bred Italians working on red clover, would give them the preference over the other races, with me, had they not many other redeeming qualities besides. I can not help thinking that Ernest is mistaken in thinking that the superior working qualities he sees in imported stock is wholly due to the fact that they *are* imported. I believe that it is in the crossing which gives the great vigor. I have more imported stock in my yard than ever before; and I find that, from my best improved bees (done by judicious crossing) I have, and am likely to obtain, double the honey I shall from the imported. I also find that daughters of imported stock, crossed with my stock, stand much ahead of their mothers as to the gathering qualities of their worker progeny. This is the result given in this, the poorest of all seasons (with me) for 14 years.

Well, this article is already too long, and I have hardly got half through. With the editor's permission I will conclude it in the issue for Sept. 15.

BORODINO, N. Y., July 31, 1886. G. M. DOOLITTLE.

By all means, friend D., give us the rest of your very valuable communication. I do not know how you could think we shouldn't care for your views on this most important subject. I believe our experience agrees with all you say, unless it be in regard to the progeny of our imported queens; and as honey-raising is not a specialty with us, you may be the nearest right. I am quite sure that a great improvement could be made by persistently rearing queens in colonies that give us the largest honey-yields.

"BEES AND BEE-KEEPING," AGAIN.

WHAT IS SALIVA AND ITS FUNCTIONS?

I HAVE read Prof. Cook's review of "Bees and Bee-Keeping" with pleasure, and I feel sure every reader of GLEANINGS will think more highly of him for the good-natured way in which, as the editor says, he "stands fire." It has been said, that Mr. Cheshire's criticisms show an unkind spirit toward Prof. Cook. I find he is quite as severe in criticising the works of other authors; and I think in no case is he too much

so, provided he is correct as to his facts. If, on closer investigation, it be found that he is in error, it will be in order for those authors to handle him as vigorously as was recently done by the editor of the *British Bee Journal* on the subject of bacteria. There does not seem to be as much "gush" and "slopping over" amongst writers in the old country as we sometimes see on this side of the water.

Referring to the similarity of the digestive process in all animals, on page 58 of "Bees and Bee-Keeping," Mr. Cheshire says: "During the process of chewing, or mastication, glands, of which we, like the bees, have three pairs, pour into the mouth saliva, whose principal office is to chemically change some parts of our food, and notably starch, which, under its action, begins to be formed into sugar, one of the most soluble bodies furnished by the plant world."

Regarding this statement, Prof. Cook remarks as follows: "Here Mr. Cheshire makes a strange error in the statement that our saliva is wholly a digestive liquid, that it changes starch into sugar. It is well established, that our saliva is almost wholly mechanical in its function, and that the pancreatic juice digests the starch." Prof. Cook probably follows Dr. J. C. Dalton, Jr., who says: "The function of saliva is altogether a physical one. Its action is simply to moisten the food and facilitate its mastication, as well as to lubricate the triturated mass, and assist its passage down the œsophagus." Dr. Dalton refers to the investigations of leading French and German authors in support of his view; but their observations were made on the masticated food of some of the lower animals, in which cases no glucose was found. The results of these observations do not necessarily prove that Dr. Dalton is correct; because later investigations have shown that, "whilst the saliva of man and some few animals possesses the remarkable diastatic ferment, it is absent from the saliva of a majority of animals."

On the other hand, on page 141 of his *Physiology*, Prof. Huxley says: "The secretion of these salivary glands, mixed with that of the small glands of the mouth, constitute *saliva*—a fluid which, though thin and watery, contains a small quantity of animal matter called *ptyalin*, which has certain very peculiar properties. It does not act on proteid food-stuffs, nor upon fats; but if mixed with starch, and kept at a moderately warm temperature, it turns the starch into grape sugar. The importance of this operation becomes apparent when one reflects that starch is insoluble, and therefore, as such, is useless as a nutriment; while sugar is highly soluble, and readily oxidizable." And on page 154 he says: "The conversion of starch into sugar, which seems to be suspended wholly, or partially, so long as the food remains in the stomach, on account of the acidity of the chyme, is resumed as soon as the latter is neutralized, the pancreatic and intestine juices operating powerfully in this direction."

In his article on "Nutrition," in *Encyc. Brit.*, published in 1884, Prof. Gamgee says: "The process of mastication, besides triturating the food and mixing it with the alkaline saliva, permits it to become raised nearly to the body temperature, in which condition the dextrose and the starches readily fall a prey to the ptyalin, and begin to be converted into dextrose and maltose. This change is very rapidly effected—it begins instantly, if the

starch is already boiled, so that, unless the food is "boiled," a considerable quantity of soluble dextrose and sugar is formed before the bolus is swallowed."

From the foregoing it will be seen that, although he disagrees with Dr. Dalton, Mr. Cheshire is in accord with some of the latest and best authorities of the day.

S. CORNELL.

Lindsay, Ont., Can., July 26, 1886.

Thank you, friend C.; but when doctors disagree in such matters, who shall decide? Unless some special reason shall make it very important to know the exact truth, I can not see why it matters very much after all, as to who is right and who is wrong.

A SUGGESTION IN REGARD TO HANDLING FOUL BROOD.

ALSO SOMETHING ABOUT THE NAMELESS BEE-DISEASE.

IN GLEANINGS for Aug. 1, 1885, page 610, you describe what is evidently foul brood. In burning the combs you did all right; but why starve the bees, when there is a better way? In my experience in bee-keeping of over 21 years, I have had to deal with foul brood four different times, either in my own yard or in the yards of some of my friends. I condemn the practice of starving the bees, as it makes them almost worthless after such treatment for future comb-building. I believe it is well understood, that bees must be *fat* to build comb to any extent. Put them in a box, and feed them; make them build comb for three or four days; feed them well; keep them fat; then put them on other combs or foundation, and they will be in condition to build combs and rear brood. Don't be afraid. The comb-building in the box uses up all the honey the bees may have carried with them from the foul-brood combs.

THAT BEE-DISEASE THAT HAS NO NAME.

Let me call your attention to GLEANINGS for October 1, 1885, pages 658 and 677. For several years, at times, I have seen those nervous, shiny-looking bees (made shiny by the other bees worrying them trying to get them out of the hive), but I have never known of any loss of whole colonies until the present season. In this locality the disease is quite prevalent, in some instances causing the loss of the entire swarm. Changing the queen does not stop the complaint. Sometimes a swarm afflicted with the disease will recover in a few days, and remain well, while others, after recovering the first time, will again be taken down with the same disease. I have used salt, a small handful, placed at the entrance of each hive, where the breath of the bees at night dissolves a portion of the salt, which the bees seem to like. With some swarms it seems to help them, curing them in a few days completely, while with others it seems to have no effect. I have in some instances seen from a pint to a quart of bees thrown out in 24 hours.

QUESTION.

What effect, if any, does this disease have on a swarm, that, having once had it, survives the winter? Does it follow that they will have the same disease the second year? Will some one who has had experience with this disease answer?

So far as my observation goes, the *brood* is not affected by the disease—at least it looks healthy.

QUESTION.

Is there not something which, if fed the bees, will be a positive cure? Is it not a nerve disease? Certainly the bees appear very nervous.

What of the honey season? So far as I know, there will not be one-fourth of an ordinary crop.

Fabius, N. Y., Aug. 2, 1886.

H. D. MASON.

Friend M., I think very likely you are right about making bees build comb or build out sheets of foundation, instead of starving them. With us we can not afford to risk anything on experiments. At present writing, Aug. 4, but one more colony has been found showing any trace of the disease.—In regard to the "nameless bee-disease," as it has been called, we can not answer your questions. There may possibly be some specific, if we knew just what it is; but I believe medical men tell us there are very few specifics that are certain in all cases. I have never noticed it in winter time, but have several times seen it appear as early as April.

THE HONEY SEASON IN THE MISSISSIPPI VALLEY.

CHILLED BROOD, AND HOW TO CLEAN FROM THE COMBS.

MR. EDITOR:—What is the matter with the bee-keepers adjacent to the Mississippi River, in Mississippi, Louisiana, and Arkansas? Are they still in the business, or are they so busy handling their honey crop that we see no notice of them in any of the bee-papers? or is it that their bees have done so little that they are ashamed to make known how little they have done? I think there should be some reports from some of the sections between Memphis and New Orleans, as this section can be classed as a large honey district. The failure of the crop in this region, it seems to me, ought to have some effect in stiffening the market. A large crop from California always bears down the market somewhat, and a good deal sometimes. Likewise a full crop in the Mississippi Valley has its effect. I think it well for the condition of the crop to be known for so large a region as the Mississippi Valley district, for the effect it will have on the general market. Although so far we have in this locality almost a failure, yet we should be glad to have it known in all the markets that such is the case, for the tendency it would have to keep prices up. It should be our aim to keep prices up as well as we can, though we may not get the benefit of them for another year. We should not be jealous of those who happen to be successful this season. If it will help to raise the price of extracted honey to tell you that the honey yield in St. Charles Parish, La., has so far been exceedingly small, I shall be glad to inform you such is the case. If the whole district of the Mississippi Valley, from Memphis down, and probably from Cairo too, has not the same report to make, "exceedingly small," please let's hear from some of the big producers, and let them give quantity and number of hives, spring count, and see if the report is not "exceedingly small" compared with other years.

I began this season with 125 hives, in fine condition. Up to June 9th I extracted 26 lbs. per hive. I have extracted only about 10 gallons since.

Swarming time here begins usually about April 15th. My 125 hives were in as fine shape as any bee-keeper could wish, when all at once we had a cold spell, and the brood chilled. Two hives in particular had 13 well-filled frames of brood, and a great many had 9, 10, and 11 frames filled with brood. Every one of my strongest hives was ruined. I waited till the latter part of June for them to clean out the combs and build up again, but they would not do it; so to get any benefit at all from those hives, I took their frames all out that had dead brood in, and took them to the extracting-room and uncapped them, and, putting the frames in the extractor, I made things hum. I could not spare the good brood scattered about here and there, because that bad brood had to come out, and the good had to come with it. I then put them back in the hives, and the bees cleaned them up; but they could not clean all of them well enough, for some of the fresh brood in those cleaned combs died. Now, it wasn't foul brood, because there were no sunken caps with pinholes in them, nor did they have that stench in the hives; but I tell you the air was thick with unpleasant perfumery when I was extracting those frames. I extracted over twenty hives, and threw out over ten gallons of the rotten, slimy stuff. They were thrown back so much by the operation that many of them dwindled down; and besides having no swarms, I have reduced my stock by uniting to 117 at present, and shall, as rapidly as I can, reduce them to about 100 hives. If any of the Pelican bee-keepers can boast of the wonders of Louisiana as a honey State for 1886, I am ready to read all such reports; but I should like affidavits to accompany reports of large yields. Louisiana has yielded enough rain water this season to supply the whole Union. When this section gets dry, the ground cracks open, and is as hard as a brick; and when it rains too much the ground gets tough and gummy, like rubber or glue.

May be next year we'll get a chance to astonish you. If we do, then you'll have to have a "Louisiana" column in which to chronicle big yields; but on off years like this one up to date, the Mississippi Valley bee-keepers are conspicuous by what they don't report.

3—C. M. HIGGINS, 125—117.

Hahnville, St. Charles Par., La., Aug. 3, 1886.

FLORIDA.

AN ADVERSE REPORT FROM OUR OLD FRIEND W. S. HART.

HERE we are, arrived at the ordinary time for our surplus honey-flow of the season to begin to check up, and yet there are not, as far as I can learn, a dozen barrels of surplus honey in this "bee-belt," as it is often called. This season has certainly been an anomaly to the bee-keepers of this part of Florida. I do not care to give a full report of the season up to date just now, but will say that bees bred up very strong in March, where there was plenty of honey in the hive to go with what little was gathered in the field. It seemed as though they would turn honey into brood to almost any extent in proportion to the amount of the former that was provided them. There was considerable swarming during the late days of March and through April, although there was but very little honey coming in. Almost all swarms had to be fed at once; and if given uncapped

ped brood they would construct queen cells on it and cast a swarm before any eggs were laid. I never saw swarms cast before, when so little honey was coming in. Instead of the usual dry weather through April we had a good deal of rain, and the drought commenced in May, about the time that the summer rains usually commence. It continued very dry until June 18th, when we had quite a shower. Since that it has rained almost every day, and is raining now. I do not think that any one here has ever seen more water in the "flat woods" and hammocks of this "coast section" than there is at present. The dry weather in May and June prevented all of our honey-producing plants and trees that usually come in then, and give us our early surplus, from doing much more than to provide for the wants of the brood.

The mangrove crop, as before stated, having been destroyed by the unprecedented cold of last winter, our only hope for a crop of white honey was based upon the cabbage palmetto. This tree was watched with much interest, as there has been considerable discussion as to its merits as a honey-producer, some claiming that most of last year's white-honey crop came from it, while others claim that they have never had a barrel of honey from the tree, as it produces only pollen. What makes it so difficult to decide this matter is the fact that both it and the mangrove are in bloom at the same time, and the bees are hard at work upon both, and at times honey is coming in quite rapidly when the bees seem to be working mostly on the palmetto, notwithstanding it is seldom that a bee found on its bloom has its sack half or even a third full of honey. Well, the tree is now past the prime of its bloom, which has been profuse, and there is almost no white honey in the hives; there is less brood than ever known before at this season; and although colonies that have been well cared for are mostly in fair shape, some have been lost through neglect, as many of our bee-keepers had to give their time to other work in order to bridge over the first and only season not giving a paying crop of honey to the skillful apiarist when prepared to receive it that I have ever known or heard of in this part of Florida.

The mangrove is sprouting out in fine shape from roots and lower trunks of the injured trees, and will probably give quite a crop of honey next year, and a full crop the year after. Don't put us in "Blasted Hopes," as our courage is good yet.

Hawks Park, Fla., July 29, 1886. W. S. HART.

NOTES FROM ONE OF OUR FRIENDS IN SOUTH AFRICA.

THE POSSIBILITY OF SHIPPING QUEENS FROM THERE HERE.

MR. ROOT:—Your name is too well known in bee-circles to escape the notice of any bee-keeper, even one in South Africa, where bee-keeping has little or no status. I have been a bee-keeper over 25 years, 15 of which have been spent in this colony, in which, until very recently, I have lived almost wholly unenlightened as to the immense advance of bee-keeping during that interval. Of course, therefore, I have been a disciple of the old school, left to his own observations. Some of these are given in the transactions of the Naturalists' Society of this

Province, a copy of which I take the liberty of sending you. Since its publication I have happily become acquainted with the *British Bee Journal*, etc., and with your most practical *GLEANINGS*, a copy of which is now before me. From these I have been impressed with the fact of the great demand for foreign varieties of bees, with a view of improving bee-strains. This has led me to draw the attention of the bee-world to the supreme excellence of the S. African breed, reference to which has been made more than once in the pages of the *B. B. J.*

From an advertisement in the latest issue of this journal, if you should see it, it will be gathered that Frank Stroud, my son, who has been recently engaged in the rearing of a large number of the best quality of queens, under my own immediate supervision, is prepared to forward such African queen-bees, pure bred, as may be required, guaranteeing their fertility; or nuclei in working condition. The price mentioned is calculated for a single queen only, though where a large number is sent, the cost will be very much less.

S. African bees are a mingled race, probably, of the old Egyptian and brown bee, with a dash of a grayer variety; but they are inimitable workers, and by a long way superior in every respect to the European bee of my earlier experience. The winters here are naturally not quite so severe as in Great Britain, for example; but the droughts here at times are terrible; and how bees live through them, much less increase and multiply, and gather honey notwithstanding, is indeed a marvel. When, however, bee-keeping is about, their energy and activity are equally remarkable, early and late, all the year round. They have no diseases, and are, I should say, an improvement even upon the Ligurians if only in this one particular.

As you are a large importer and grower of foreign bees, and your influence widely felt, I hasten to bring these facts to your notice, believing that an acquaintance with the "Africans" referred to would immensely benefit all who are interested in bee culture and honey growth. I should be glad of any suggestions you might be pleased to offer as to the best means of transporting bees from this quarter to you, the kind of cage you would recommend, etc.

J. W. STROUD, M. D.

Port Elizabeth, Algoa Bay, Cape Colony, S. Africa.

Friend S., we are very much pleased indeed to get this report from so far away. I presume your son Frank is working with the aid of movable-frame hives, and all modern implements. We should be very glad to know how much honey you get, in an average season, from a colony of these South-African bees. I think there is hardly any possibility of sending bees by mail this great distance; but perhaps you might send them to Australia, or some other point where Italians are kept, so that they could be compared side by side. Doubtless some of the readers of our journal will be glad to correspond with you in regard to the matter; and if you can not send us any live bees by mail, please send us a few dead ones; or, better still, fill some of the workers with honey, and then put them in a very small vial of alcohol, plugging this up in a wooden block for safety. We will try mailing you a block already prepared, as it may save you some time and trouble.

WEIGHING QUEENS' EGGS.

Can a Queen Lay Eggs Enough in a Single Day to Overbalance Her Own Weight?

PROF. COOK PROVES, BY WEIGHING THE EGGS AND WEIGHING THE QUEEN, THAT SHE MAY.

DEAR MR. EDITOR:—As I wrote you, we are carefully investigating the laying powers of a queen, and we find that the number of eggs that the queen lays per day is no more surprising than the quantity by weight. Mr. Cheshire states that the queen in spring "will turn the scales at three grains—feeding adding fully half a grain more." He says that 90,000 eggs weigh 270 grains; hence 3000, the daily product of a good queen, would weigh nine grains, which would be nearly three times the queen's weight.

You expressed doubt, Mr. Editor, and no wonder. I have found Nature's laboratory so full of wonders that I have learned to doubt, or, at least, deny, no statement like this till investigation shows it to be unfounded. My students and I took a queen, $\frac{3}{4}$ Syrian and $\frac{1}{4}$ Carniolan, or about that, and carefully weighed her on scales that weigh to one ten-thousandth of a gram. She was weighed by two separate parties, and on different scales, and weighed .2299 grams. Multiply this by 15.434 and we find her weight 3.548 grains. The queen was carefully lifted from the comb while laying. We see, then, that this queen weighed a little more than one-fifth of a gram, or a little more than $3\frac{1}{2}$ grains.

We next weighed a piece of comb full of eggs, which had been carefully dusted, both by blowing and by use of brush. It was laid on a smooth dusted board, and handled by metallic forceps. I then carefully removed 20 eggs, which were carefully weighed. The weight was .0026 of a gram. Multiply this by 150, and we get the weight of 3000 eggs, the number that a queen will lay in a day at this season. I then removed 40 more eggs, and again weighed the comb. By subtracting this weight of the comb from the original weight, we found the weight of 60 eggs, which agreed almost with the weight as determined by weighing the 20 eggs previously. Thus the weight of 3000 eggs is .39 of a gram, which, reduced to grains, gives six grains. Thus it appears that, in this case, the queen may lay 1.7 times her own weight. Unless the eggs vary in weight—and why should they not?—Cheshire has got the eggs too heavy by $\frac{1}{2}$ their weight.

We shall repeat this experiment with several queens and their eggs. We shall also weigh eggs just laid, and those just ready to hatch, and compare weights.

Now, Mr. Editor, you must remember that your name is Amos, not Thomas, and never doubt again.

A. J. COOK.

Agricultural College, Mich., July 21, 1883.

It would appear, friend Cook, that Frank Cheshire had already made the experiment when I wrote you. Of this I was not aware, for we had not yet received the complete numbers comprising Volume I. of his book, and in this case I shall have to beg his pardon and yours also. Yes, I will try to remember that my name is Amos and not Thomas. It is not often that I feel like demanding so much proof; but I hope I shall be ready to accept truth when it is made so plain as you make it. When you talk about your scales that will weigh queens and

queens' eggs, I confess I begin to have a good deal of reverence for the men who can make and use such instruments. Then it is indeed true, that, bound up in the small body of a queen, or mother-bee, are the necessary arrangements and vital forces to take the concentrated food furnished by the workers, and convert it into several thousand of these tiny eggs, each one having a separate life-giving principle bound up within it, each one incased in a perfect pearly shell of its own, and in one short 24 hours she may produce these finished eggs in quantities numbering thousands, and in weight two or three times that of her own body, even when said body is full of eggs. I feel that, if I have been a doubting Thomas, I am now, with the facts you give, ready to say with doubting Thomas, in words expressive of unquestioning faith, "My Lord and my God;" and, "How marvellous are thy works!"

AN A B C SCHOLAR'S EXPERIENCE.

MOTHS, WIDE FRAMES OR CRATES, STINGS, ETC.

MY success with bees, all things considered, has been good. When I began I knew only that bees make honey, and sting, and that there are workers, drones, and a queen. For the first twelve months I had a mortal horror of the moths, nor did I get over it until Root, in GLEANINGS, declared that he would not give 25 cents to have the whole tribe of moths abolished. If the moths have ever harmed my bees, I have seen no evidence of it. Moths do ruin combs that are off the hives, and left carelessly exposed.

WIDE FRAMES OR CRATES.

Last year I used section boxes and separators; but it was such a job to get the wide frames off the hives, that this year I discarded the wide frames and section boxes, substituting for them ordinary frames with fdn. starters, $\frac{3}{4}$ or 1 inch wide. I am much pleased with the change. However, there has been a good deal of drone comb and brood in the honey-frames. One of your correspondents affirms that a remedy for this is to fill the frames with fdn. Is he right? Can this be depended on? If it can I will fill every honey-frame, next season, with fdn. I would have done it this season to help the bees along had not another of your correspondents affirmed that bees get along with their comb-building just as fast without as with fdn. His experiments seemed to have been conducted carefully and fairly. Please state how this is. Foundation costs enough to make one want to know the real facts about it. In the use of starters I found out the importance of having the starters go very near the uprights of the frames. Where I let them extend only within an inch of the uprights, the bees would build straight to that point and then go crooked, clear over to an adjoining comb. At first I put all my colonies on the ground; that is, on half-bricks laid flat under each corner, but the spiders and ants bothered so much I put legs to all my bottom-boards, and I am much pleased with the change.

KEROSENE FOR ANTS.

Only a few weeks ago one of my colonies was invaded by ants. All I did was to throw down my

inclined alighting-board, and pour a little kerosene on the legs of the bottom-board. Had the hive been on or very near the ground, the ants would not have desisted until by some means they were thoroughly exterminated.

SHAKING INSTEAD OF BRUSHING THE BEES OFF.

A word about my experience as to stings: The veil and gloves made me feel so muffled and cramped that I have generally done without them, preferring a few stings to the cramped feelings of working under cover. But about six weeks ago, in taking the honey from a hive I was so unmercifully stung that I had to walk off and get both veil and gloves. Since then I have taken honey from hive after hive without one single sting, and without the use of either veil or gloves. The great difference in the behavior of the bees is not due to atmospheric conditions, scarcity of flowers, or any thing else but my method of doing the job. When I was so badly stung I used a brush to get the bees off the frames of honey. I never brush them off now, but shake them off by a sudden motion of the hands and arms, as recommended by you. Tell your beginners that bees do mind being brushed off the combs, but they do not mind being shaken off. Of course, there should be an inclined pathway to the hive in front, and on this or in front of the hive the shaking should be done, so they can readily crawl in. They behave very much as they do when a swarm or a dipperful from a swarm is poured in front of the hive. This may seem a very small matter to experienced bee-keepers; but the difference between twenty stings and no stings at each hive is a considerable thing. Besides, *every* bee is easily shaken off without any violent use of the muscles. My bees did so poorly at side-storing that I shut up all that part of the lower Simplicity hives devoted to wide frames and section boxes.

What do you and your correspondents think of fdn. with wires molded into it? What is the additional cost, and is it worth one's while to adopt it?

JOSEPHO.

Tuscaloosa, Ala., June 28, 1886.

Friend J., there is quite a difference of opinion in regard to wide frames or crates. Dr. C. C. Miller says, on page 35 of his book, "A Year Among the Bees:"

An objection to the use I made of wide frames was the bits of comb and honey between the bottoms of these frames and the tops of the brood-frames. This might be remedied by using the Heddon skeleton honey-board. Another objection was the great amount of labor entailed. For one not over strong it made a great deal of heavy lifting. Yet I secured some good crops of honey by it, never in more satisfactory shape, and I am not sure whether I can do any better by any other system, if I do not take into account the item of labor.

This might make it a question of circumstances with the bee-keeper. Foundation will surely prevent having your frames filled with drone-comb. As to whether it pays better for comb-honey to let the bees build natural comb in the brood-frames or put it in fdn., remains undecided. Your suggestion in regard to having the foundation go clear up against the uprights of the brood-combs is an excellent one.—Kerosene is probably a good remedy for ants.—More than one of our new pupils have made the same discovery you have when they undertook to brush bees, especially if the brush was a stiff one—like a stiff broom, for instance. The brushes we advertise for the

purpose irritate the bees little, if any.—In regard to foundation with wires imbedded, the way it is made by Van Deusen & Sons, it answers a good purpose without question; but I believe most of the friends prefer the plan laid down in our price list and A B C book.

FEATHERING—GETTING QUILLS.

MRS. CULP'S SCHOLAR, AND HOW HE HAS PROGRESSED.

THE first article I ever wrote for a bee-journal appeared in GLEANINGS, June 15, and was entitled, "Just Hatched." In your appended note you say, "Don't fail to tell us more about it." With hearty thanks for your kindness, I comply with your request.

Six weeks ago I knew nothing of apiculture nor of bee-literature, having never read with care a single article on the subject. Since then I have gone through A B C and Cook, reading nearly every thing in both, and re-reading much of their contents; and I have almost devoured several back numbers of GLEANINGS, handed me by a friend. I am greatly pleased with GLEANINGS in every respect. I find in it no bitterness against other journals on apiculture, and very little *hatred* between its contributors. It does not attempt to snub the Almighty, nor does it treat religion as something to be shunned, if we would be safe. Altogether, I feel as though I had got into good company.

I have four colonies, all from Mrs. Culp's apiary, two of them quite recently, and they are getting in lots of good work. They have received 72 new frames filled with foundation, the most of which is *done up*; and they have done some work in sections besides. I have formed one nucleus, which affords me great pleasure, and opportunity for observation and study. I hope to grow this nucleus into a strong colony before fall.

I have visited several small apiaries, and two of some note, and I find this a fruitful practice for gaining knowledge. How I should love to visit "The Home of the Honey-Bees"!

I have assisted in almost all kinds of apiarian work. I have beheaded drones, clipped queens, plucked queen-cells, have had queens hatch in my hands, taken queens from hives, introduced queens, hived swarms, transferred colonies, extracted honey, etc.

In the last few weeks I have put together about 300 frames, and all these I have wired; and about one-third of them I perforated with a brad-awl, that they might be wired. I am greatly in favor of wired frames. To prevent sagging I ordered tin strips $3\frac{1}{2}$ by $\frac{1}{4}$ inch, which I nailed over the top-bar and down on to the end-bars. I have put \$25.00 worth of comb foundation into frames for myself and others. Comb foundation is a great invention, and its use should become universal, I think. It pays to put it in well. I first varnish one side of the comb-guide with melted wax. This wax holds the foundation much better than the new wood will; and after the foundation is in I drop melted wax on its upper edge in four or five places, and especially at each upper corner. All this takes time—a little time; but it is the stitch that saves nine.

It does not do well, I find, to hive bees at swarming on frames of comb foundation, as they are so warm then, through excitement, that they melt the wax of which the foundation is made. I still like the chaff hive; but I believe the extra box for the upper chamber would often be an advantage. I think I shall try it and see. A box, made two sides of pine and the other two of heavy tin or sheet iron, would have room in the chamber, and yet allow the frames to run across the lower ones as they do.

She whom my children call "ma" is delighted with the bees. She sends many thanks for your kind remembrance of her. J. S. RICKETTS.

Hilliard, O., July 6, 1886.

Friend R., your suggestion of making an upper story to set inside of the upper story of the chaff hive, of part wood and part tin, is ingenious, but there would be one trouble with it: It would not be conveniently interchangeable with the regular Simplicity hives. —We are glad to note your enthusiasm and zeal, and we hope it may bear good fruit. We have labored hard to see that nothing goes into GLEANINGS reflecting on any other bee-journal; and we mean to try still harder to let nothing uncourteous be seen on its pages toward anybody. Of course, we expect to expose frauds when nothing but exposure will stop them; but we mean to do even this in a kindly spirit.

HOW SOME A B C SCHOLARS SUCCEEDED.

BRINGING STARVED BEES TO LIFE, ETC.

WE had a swarm of bees come to us about the middle of July, 1882. Mr. L. went to one of the neighbors and borrowed a box hive, and the hired man hived them. The hive was glassed on one side, so that, by opening a wooden door, we could look in and see them work, and we watched them very closely.

The basswood yield was very good that year, and they made honey enough to winter on. We put them in the cellar in the fall, and every warm spell through the winter we would go and listen to see if they were living; and sometimes, if we did not hear them, we would jar the hive, we were so anxious to know whether they were still alive. But they survived all such hardships.

Mr. L. sent for an A B C book in the spring. About the tenth of April he put the bees out of doors; and during apple-tree bloom he had them transferred to a Langstroth hive. The tenth of June they sent out a swarm, and it clustered on the body of a tree; and if we were a little nervous over the first swarm, you will pardon us; but with milk-pan in one hand and wing in the other, Mr. L. soon had them in the hive. The next swarm was not so easily managed, as they came out the second time, and we did not know what to make of that, so we went to the A B C book and found that was a freak of the young queen. After coming out two or three times they settled down in their new home.

The third swarm we sent back. The first swarm made 44 lbs. of nice section honey. Mr. P. who keeps 90 swarms, said it was the nicest honey he ever saw. Mr. L. bought two colonies in the fall for \$5.00 each. The next spring he lost his origi-

nal swarm. He had no smoker, so he could not look at them. He thought he would wait and see whether his bees lived through or not before he bought one. We watched them to see if they came out on all warm days. One day we noticed that that colony did not come out when the others did, and there was another colony we could not see any flying from, so I went out there and I saw two or three bees at the entrance that could just crawl. When Mr. L. came to the house I told him they were starving to death, and he opened the hive and found a good many of them on the bottom of the hive, and those on the frames could only flutter their wings a little. He said he did not think we could do any thing for them; but he brought them in and put some strained honey in the comb, and in two hours they were flying. The other colony were all dead. Mr. L. got a smoker in the spring. That year we had no new swarms, but had 397 lbs. of honey. One of the colonies bought made 123 lbs. Last year the four colonies averaged 83 lbs. apiece, and increased to nine; this year to 20. We take GLEANINGS, and like it very much.

Harford, Pa., July 7, 1886. MRS. H. M. LINDSY.

LEAF-HOPPERS.

Do They Really Secrete Honey?

PROF. COOK GIVES US SOME INTERESTING FACTS IN REGARD TO THIS FAMILY.

FRIEND ROOT:—We send you, by to-day's mail, some insects which we find in great quantity, producing a sweet substance we suppose to be honey-dew. They seem to hatch on hemp, and osage orange. When first seen they are white and linty until they get their wings. Bees are working all hours in the day on this substance. Can you tell the name of the insect, or are they a common thing? I never saw such before this year. Z. G. COOLEY.

Norwalk, Iowa, July 13, 1886.

Prof. Cook replies in regard to the above as follows:—

These are not plant, or scale lice, but are leaf-hoppers, which are readily known by their broad heads, prominent eyes, and sharp-crested thorax. The larvæ of many species secrete a liquid in which they live and feed. This liquid contains air-bubbles, and looks not unlike freshly ejected spittle from a clean mouth. These leaf-hoppers are so called, because they live or feed on leaves, and when disturbed they hop away. One, the grape-leaf hopper, is often a serious pest to the vine which gives it its name. Though these are not plant, or bark lice, they do belong to the same order—*Hemiptera*, or bugs, as can be seen by the prominent beak or strong sucking-tube, which is bent under the body when not in use. You, Mr. Editor and others, have noticed the frothy liquid surrounding these larval leaf-hoppers on an evergreen-leaf or grass-blade. I have never discovered that these secrete a nectar, nor heard of it before. I am led to wonder if the same plants did not harbor and provision a colony of plant lice which supplied the sweet. The matter should be sharply looked into. If these leaf-hoppers do secrete nectar, it is a new and interesting point. A. J. COOK, Agricultural College, Mich., July 20, 1886.

ANOTHER WAY FOR KEEPING THE QUEEN OUT OF THE SURPLUS.

ONE METHOD OF PREVENTING AFTER-SWARMS.

WE have always had some difficulty from our queens going into the surplus apartment and occupying a part of the combs. If we are working for section honey it is not only provoking, but ruinous to the honey-crop, to have the queen lay eggs in the sections, where we want nice white-clover honey; and it is equally provoking, if less ruinous, when working for extracted honey, to find combs that should be solid with honey, half filled with brood. Out of many methods tried, the following is the only perfectly successful one with us:

We take a piece of perforated zinc, just long enough to fit in the hive lengthwise and 18 inches wide. We bend this zinc in the shape of an **L**, thus **7**, the long arm of the **L** just reaching from the top of the brood-frames to the bottom of the hive. This is now put between the 4th and 5th frame, leaving four frames on one side and six on the other, when the short arm of the **L** will just cover the six frames (of course before putting on the zinc we see that the queen is on one of the six inclosed frames). Now, if the zinc has been carefully fitted, the queen is securely caged upon these six frames. If the queen is inclined to come out at the entrance, and go around, a strip of perforated zinc may be tacked at the entrance, in front of the six inclosed frames. We have not found the latter necessary, only where we wished to prevent swarming; if natural swarming is desired, the zinc in front of the inclosed frames must be removed or the queen could not leave the hive.

The benefits obtained by thus caging the queen upon six frames are, 1. We are not troubled with brood where we want surplus honey; 2. We are not troubled with honey where we want brood; the bees empty almost every cell from the inclosed frames, and they are filled with brood from top to bottom; 3. The four frames upon the other side of the zinc division are filled solid with honey, and make grand combs for winter; 4. The swarming business is absolutely under our control.

When a swarm issues we lift off the surplus, set aside the brood-chamber (lower story), put another in its place filled with empty combs, if we have them; if not, with wired frames having a strip of foundation $1\frac{1}{2}$ inches wide attached to the top-bar. We usually take out one frame from the old brood-chamber and put in the new. The surplus is put on this new brood-chamber upon the old stand, and the swarm hived in just the same location it came from, while the old brood-chamber is removed to a new location.

The benefits derived from this method are, so far as my observation goes, 1. The new swarm goes to work in the surplus at once, with all the energy and stimulus which swarming gives; 2. They are in the humor for comb-building; and if we want nice straight worker-comb built, we can get it done rapidly in this way; 3. A large number of the old bees from the old brood-chamber (now on a new stand) will return to the new swarm. The colony in the old brood-chamber on the new stand will be so weakened that, when the young queens hatch, there will be no swarming fever, and we have no after-swarms.

G. C. JOHNSON.

Fountain City, Ind., July 7, 1886.

TENNESSEE AS A HONEY STATE.

THE SCENERY FROM LOOKOUT MOUNTAIN.

OUR winters are so mild that we can winter with perfect safety on the summer stands. This I consider a great advantage over the Northern States; and could bees be wintered there with as much assurance that they would come through all right as there is here, I do not think that the wintering problem would be discussed as much as it is; still I believe it requires one-third more stores for a colony to winter on in this country than it does in our extreme Northern States. The reason of this is, that they rear more brood here before there is any honey to be gathered than they do in the North. It is not uncommon for bees to have four full frames of brood by the first of March, and for them to throw off swarms the fore part of April.

We do not have any spring dwindling here. Our colonies seem to be always strong, and ready for work when there is any thing for them to do.

The first honey that comes in in the spring is from the peach bloom. This is generally from the 15th to the 25th of March. After this comes other fruit bloom, and some other wild flowers and forest blooms. This keeps the bees in fine shape until the first of May; then comes the poplar bloom, and at this time the bees are in the surplus-boxes doing fine work, as there are large quantities of poplar here. About May 10th the white clover commences to bloom, and continues to bloom for six weeks. We have not as much white clover here as you have in the North, but in certain localities there is an abundance of it here. Before this is out of bloom, the basswood, chestnut, and persimmon bloom; and while they are still yielding honey, the famous sourwood puts forth its bloom. This produces well, and the sourwood honey is very fine, except that it is rather thin when first gathered. The sourwood bloom lasts until about July 10th, and from then until July 21st there is not much for bees to work on. Now comes in the sumac, and the bees are doing finely on it, considering the cool nights we are having. During the whole month of August we have plenty of pea bloom (the cow, or clay pea). There are large fields of peas sown in this section of country. We have considerable goldenrod and fall aster. There are a great many honey-plants that I have not spoken of, and some of them are of no little importance. Among them are the different kinds of mints; also spider plant and black locust. We have our bees located in a little valley, the Sequatchie. This is between two mountains — the Cumberland and Walden Ridge. Our bees have access to the valley, and the sides and the top of the mountains for some distance back.

As Ernest asked, in last GLEANINGS, in regard to the honey-flow being prolonged where bees had access to both the valley and the mountain, I will say it is greatly an advantage with some bloom, such as chestnut, sourwood, and poplar; and if there is no bad weather to stop the bees off they will follow it, even for several miles on the top of the mountain; but I believe he was referring more particularly to white clover. I would say that there is but little if any white clover on the mountains in this country. Friend Lawson is located right at the point of Lookout Mountain, and right where the "Battle above the Clouds" was fought. The breast-works that were thrown up at that time can be

seen in his yard, and it is here that one can command a full view of the city of Chattanooga, or take a telescope and look into seven States; and here with the naked eye you can see the Tennessee River as it winds around the city of Chattanooga to the foot of the mountain, then back, making what is called the "Moccasin Bend."

The climate here is good. The summers are warm, but we do not have the extremely hot weather that you have in the North. It is not often that the mercury is above 90° or below zero.

Some may think this is rather flattering for the State of Tennessee; but let me say, that this land is not always blooming in honey; for this summer has been a poor one for those keeping bees as well as for the farmers; for it commenced to rain on the 14th day of May, and there were only seven days from that time until the 11th of July but that it rained. But so much rain is not a common thing here, as it is generally dry through June and July.

Pikeville, Tenn., July 24, 1886. E. C. KEPNER.

NOTES FROM THE BANNER APIARY.

No. 80.

NON-USE OF FOUNDATION.

YOU say, friend Root, that you do not quite "catch on" in regard to there being no difference whether comb or extracted is raised, when allowing swarms to build their own combs in the brood-nest; but you begin to suspect that bees will store more honey when allowed to indulge in their passion for comb-building.

The point is this: If more honey will be secured by allowing the bees to build combs in the brood-chamber, it makes no difference in what *form* the honey is taken in the super. I do not think the first sentence of my little item on page 563 is very clear. I meant to say that I had worked new swarms for extracted honey, and that I considered the advantage gained by allowing them to build their brood-combs was as great as in working for comb honey; that really I could see no difference.

I do think that bees work with greater zest when building comb. This zest could be secured by allowing the bees to build combs in the supers instead of the brood-nest; in fact, this has been suggested by some of my correspondents. This course would defeat the main object of withholding combs or fdn. from the brood-nest; viz., that of getting the honey in the supers, and the brood-chamber full of brood. I know Mr. Jones says he is convinced that combs are an advantage in the raising of extracted honey. I agree with Mr. Jones, and I *think* he will agree with me in thinking that the combs should be in a *super*, with a queen-excluder between them and the brood-nest, and the latter free from combs or fdn., except enough for starters.

Some of those who have been trying this plan of allowing new swarms to build their own combs in the brood-chamber have been troubled by getting too much drone-comb. I think the trouble can be traced to one of three things; viz., too large brood-chamber, too old a queen, or in not putting on the supers at the *time of hiving*. Have the brood-chamber of a capacity not larger than five or six L. frames; put starters of fdn. about ½ inch wide in

the frames (they can be put in with a Parker fdu. fastener), put on a queen-excluding honey-board, then a super, either for comb or extracted honey, and have the frames or sections in the super filled with fdn.; or, better still, combs. I take the case of sections from the old hive at the time of swarming, and put it on the new hive, and in 20 minutes the bees are back at work again—working with new energy too—in the very sections that they so eagerly deserted a few minutes before.

W. Z. HUTCHINSON.

Rogersville, Genesee Co., Mich., July 26, 1886.

INVERTING VERSUS ALTERNATING OF HIVES.

THE EFFECT OF INVERTING QUEEN-CELLS AT DIFFERENT AGES.

ARE we not getting somewhat over-enthusiastic on inverting, and prematurely claiming for it what, in exceptional cases, appeared very favorable; but, upon applying it practically, would give a greater number of failures? And are we not losing sight of other arrangements that give us the same results with less labor? For instance, it is claimed by some that inverting a hive or its combs would destroy the queen-cells, and consequently prevent swarming. As I have experimented considerably on that subject, I will give the result of my observation.

About 15 years ago a friend purchased nearly all the bees in this county, something over 100 colonies. These I transferred for him into movable-comb hives. Some of these colonies had queen-cells in various stages of development; but as the colonies were to be supplied ere long with Italian queens, no special attention was paid to their position in the new hive; and as most of the combs fitted best into the frames in an inverted position many were so placed in the hive. Upon examination, shortly after, it was discovered that some of the queen-larvæ were dead, and nearly dried up in the cells, whilst some matured, point of cell upward, as though its position had never been changed. This gave me cause for investigation; and since that time I have conducted numerous experiments; and since the subject of inversion has been agitated, these experiments have been quite extensive, and I have arrived at the following conclusion:

During the entire sixteen days required to mature a queen from the time the egg is laid, there is but a single day when the queen-larvæ of some of the cells may be destroyed by inverting them. The egg remains unchanged until the fourth day, when the egg hatches and the larvæ feed for five days. During this time it is curled up in the cell, somewhat like a ring, and no inverting will destroy it during that time. But now comes the critical time. The bees begin to cap the cell, the larva straightens up lengthwise of the cell and spins her cocoon, occupying one day. If the queen-cell was built in a horizontal position as they frequently are, no inversion will destroy the embryo queen; but if, on the contrary, the queen-cell is in a vertical position, and is inverted during the day that she assumes a straightened-out shape, and spinning her cocoon, and is left in this inverted position for 12 hours, the embryo queen dies; but after a queen has spun her cocoon the cell may be placed in any position with-

out injury—a fact made known to the fraternity when friend Root taught us the use of the lamp-nursery. If a queen-cell is inverted before this time, the queen seems to remain in the base of the vertical cell, she herself retaining a horizontal position, and hatches as a stunted, dwarfed specimen.

Now, what effect, practically, has the occasional destruction of an embryo queen as a preventive of swarming? The natural swarm issues on the very day, weather permitting, that inverting of a vertical cell would destroy its inmate; and should this inverting perchance be done at the right hour, the swarming fever has so far taken possession of the bees that usually the swarm issues, notwithstanding the injured embryo queen; and, further, there are usually several queen-cells of varying ages; and if inverting is practiced before the time indicated, a dwarfed queen for the future mother of the colony is the result—an injury rather than a benefit; and this injury may result to us, if we invert for any other purpose, without knowing the condition of each comb inverted.

The advice of Ernest, on page 551, is indeed timely. Some combs may be all kinked and doubled up by inverting, and I quite agree with him on the unsightly appearance of combs whose lower edges are imperfectly built out, occupying space that should be solid with brood; and to fill this seems about the main (and I might say the *only* practical) cause for inverting. Yet this and many other profitable manipulations can be accomplished without inverting, and that is, *alternating*. A hive constructed so that its brood-chamber may be horizontally divided—that is, one half placed on top of the lower half, and arranged to interchange, furnishes all the desired advantages. If the lower edges of the combs are not built solid to the bottom-bar, simply place the lower half on top of the upper half (alternate). The lower edges are now near the middle, and are soon built solid, and filled with brood, not honey, as is usually the case when inverted.

I would not advise discarding our present hives at once, by any means; but this is a progressive age, and we will sooner or later adopt more or less of the alternating principle, as hundreds have already done in their surplus-honey arrangements. It reduces the time required to manipulate such a hive about one-half. We simply have to alternate occasionally to equalize the brood; make artificial swarms by removing one case with bees, brood and all. When honey-cases are added we alternate, bringing the center of the brood-nest directly under the sections; and any honey that may be in the brood-chamber is thus brought down below the main portion of the brood from where the bees remove it; and as the top of the brood-chamber is filled with brood it is deposited in the sections.

Right here is an important point over inverting: If a comb is inverted, its *empty* edge is uppermost, and the honey removed from below is stored to some extent in this empty comb, instead of in the sections; and the empty combs, thus inverted, with the additional space between brood-comb and section case, furnishes no special inducement to enter the surplus-chamber; whilst by the alternating plan, the solid brood is brought up close to the sections.

Seventeen years ago I constructed and used quite a number of these hives. The ends of the frames were close fitting to each other, standing on metal strips, all held in place by a wedge; but in later

years I have used them with closed, as well as with separated suspended frames, and am so using them to-day; and after carefully conducted experiments with both styles of frames, I greatly prefer the suspended frames, on account of the lateral adjustment; and although both styles can be inverted with their cases, and I have so used them by way of experiment, I can not find any additional merits from inverting, as alternating accomplishes all that is practically valuable in inverting.

Coburg, Iowa.

E. KRETCHMER.

DR. BEAL'S WILD GARDEN AT THE MICH. AGRICULTURAL COLLEGE.

ALSO SOMETHING ABOUT THE HONEY-PLANTS BEING TESTED THERE.

AMONG the many excellent things accomplished by Dr. Beal at this College is the "Wild Garden," so called, not because things are allowed to run wild in it, but because the natural herbs and shrubs are there arranged in wards so as to show the natural orders. This is in a ravine; and in the dark shades along the rocky bank are seen the graceful ferns, while in the ponds are the various aquatic plants, many of which, as the pond-lilies and the American and Egyptian lotuses, are most beautiful. Now, friend Root, how I should like to have you with me as I take my daily stroll through this, one of the most lovely places at this College! Oh! but wouldn't you enjoy it? Of late I have been especially interested in some of the honey-plants. Two of the mints are crowded with bees from dawn till nightfall, and by their superior excellence may well make catnip and motherwort hide their respective heads. I doubt if even the horsemint of Texas would more than rival these plants. They both belong to the same genus as does catnip. One is *Nepeta mussini*, and the other *Nepeta nuda*. Another plant, *Eryngium planum*, is a marvel. For weeks it has been thronged with bees. It looks some like the Chapman plant, of which I have written you; that is, the flowers are in balls; but, unlike the Chapman plant, are not very showy. To look at this plant casually we would think it a composite or relative of the teasel, though in fact it is related to neither one, but belongs to the parsley family, which fact would never be suspected without close study. I shall gather seeds, and expect to rival, though not in beauty, the Chapman plant. The two will look well upon one bed together. *Eryngium yuccifolium*, butter-snake root, an American plant of the same genus, is also an excellent honey-plant, or is so reputed.

A little way from this is the teasel. This looks much like the Chapman plant, though it is of a different family. The bees are wild about it. Did you ever notice the connate-opposite leaves, which form a cup about the stem, and hold sometimes half a pint of water? We have had no rain here for weeks, and yet these cups from Nature's own hand are full of water, and the water is full of decaying insects which have been entrapped, and are now fertilizing the plants. Gray says these cups are often full of rain water; but it can not be rain water. The water must have come from the plant; or they would have dried up long ago.

Another plant, the white verbena, is a great favorite with the bees. This is *Verbena verticifolia*, and is much better, I think, than the common place *Verbena hastata*. The various sunflowers are

also fairly alive with the bees. The bees work on these, both for pollen and honey. I have often seen bees loaded with pollen, sipping the nectar. Poor fellows! how tired they must get to thus go doubly loaded! I have seen the poor bees drop to the earth, and rest for quite a time, then rise and slowly make for their hives. I have often seen them also gather pollen from two species of these sun-flowers during the same trip. Is not the old notion, that bees visit only one species of flowers during a single trip to the fields, due rather to the fact that flowers "of a feather flock together," than to any special option of the bees?

I should like to discuss many others of these interesting plants, but will wait. In the meantime I give you, my good friend, a most hearty invitation to come and see that the half is not yet told.

A. J. COOK.

Agricultural College, Mich., July 23, 1886.

Many thanks, friend Cook, for your kind invitation, and I may accept it pretty soon. We missed you sadly at our recent meeting at friend Chapman's, which I have mentioned elsewhere. Now please have your pupils tie a little paper bag over those heads of teasel and balls of bloom on other plants, keeping the bees away for 24 or 48 hours, and then see what you find. Where bees are allowed to work on the flowers from morning till night, we have no opportunity of getting any knowledge at all of the quantity of honey the flowers secrete. What you say about the teasel is new to me. I confess I did not know that it secretes water in the way you mention, although we have plenty of wild teasels growing round all about us. I am of the opinion, that bees rather prefer to work on one kind of blossoms, for I have often noticed them in the clover-field where red and white clover were about equally divided. Some of the bees visited the red-clover heads exclusively, and others just as exclusively the white-clover heads, and I never saw a bee go from white to red clover, or *vice versa*, that I know of.

HONEY AS FOOD AND DRINK.

HONEY GINGER-SNAPS.

THE following recipe my wife has used for years with good results: One cup of brown sugar, one cup of extracted honey, a tablespoonful of ground ginger, a cup of melted butter or meat fryings, a teaspoonful of saleratus dissolved in a little hot water, and as much wheat flour as can possibly be stirred in (but not kneaded). Pinch off pieces about the size of a large marble, and roll between the hands. Leave spaces between them in the pan to allow for spreading. Bake in a moderate oven till of a nice brown, and leave in the pan till they are "snappy." In cold weather the materials should be warmed before stirring in the flour. They are perhaps a little tougher than if made of molasses, but good "all the same." They will "keep," if you keep them off the table and out of reach of the children.

A CHEAP HARVEST DRINK FOR BEE-KEEPERS.

When I was a boy my mother used to make a drink for us to carry into the hay and harvest field that we called "ginger beer." It was made of water with sufficient molasses, vinegar, and ginger to

make it taste agreeable. Since I have been keeping bees I furnish my men with a similar drink for hot weather.

RECIPE.

One teacupful of extracted honey, one teacupful of vinegar (made also from honey), a teaspoonful of ground ginger and half a gallon of water. It can be used immediately, or will be good all day. I have never had a man or boy who did not prefer this to water. The condiments can be varied to suit the taste. The ginger is a good tonic, and the stomach is not so likely to get "sick" as when water alone is drunk. They are not so liable to overload the stomach. When taken into the field for half a day, water gets warm and sickish—not so this drink. It is good all day.

EUGENE SECOR.

Forest City, Iowa, July 20, 1886.

CARBOLIC ACID FOR QUIETING BEES; HYBRIDS, ETC.

DOES THROWING DIRT BRING DOWN SWARMS?

YOU ask if my bees are hybrids. I think they are. I send off and get new queens every year or two; but the first thing I know they are all hybrids again. They seem prone to run to hybrids as sparks to fly upward.

If carbolic acid used in smokers makes other bees as cross as a rag wet with it did mine, I do not envy anybody all the fun they will have using it. I used it on one of my best Italians, and they stung me so that I could not shut my fingers enough to feed myself for a day or two. I don't want any more carbolic acid in mine.

Ernest asks one of the juveniles if he really believes that throwing dirt among a swarm causes it to alight. Of course, it does. Our work-hands used to bring them down every time if they were crossing a field where there was plenty of loose dirt. That was before I began clipping the queen's wings, when swarms ran away every day in swarming time. Neither tin pans nor drums, dinner-bells, nor yelling helps a mite; but *hitting* them with dirt or water does.

WHAT MADE THAT TOE-NAIL COME OFF?

Now for that toe-nail of yours. I have been trying to attend to it for some time, but have been just too busy for any thing. Friend Root, you *did* stub that toe — Mrs. Root was right, as she always is. Of course, I know you are honest in thinking that it came off for a little extra filing, but it did not. You stubbed that toe on Huber's cradle as you jumped out of bed some morning in a great hurry, or else you kicked it against the foot-board, or the Jersey cow stepped on it, or the wheel of the market-wagon passed over it while you were loading in lettuce, or your horse trod on it, or you let one of those fifty-cent hammers (the best in the market) fall on it, or else, or else, or else. Why, there are fifty ways that a man with his head in the clouds might stub his toe and never know it, and you are just as sure to have hit upon one of those ways as that your name is A. I. Root.

Vermont, Ill.

MAHALA B. CHADDOCK.

Now, Mrs. Chaddock, I do not like to contradict, but I tell you that none of the things you mention have ever happened to that toe of mine. My mother says I was remarkably cautious, even when I was a baby, and I have not got over it even yet. I do

not like to be hurt, and so I keep my toes out of the way. It was just as I told you—invisible forces met together as the trustees of a township do when they want to decide about building a bridge. They looked that toe-nail over critically, examining the place where I had gouged into it with the file, and finally decided it should be replaced by a new one—not a new bridge, but a new toe-nail, and it was just as I told you. During all the consultation, including the decision, I was not consulted at all, and yet it is *my* toe-nail. I am well satisfied, for the new one does not bother a bit, but behaves itself just exactly as a well-bred toe-nail ought to do.

NUCLEUS COLONIES.

HOW TO BUILD THEM UP FOR WINTER.

IT is probable that some who buy nucleus colonies do not know how to build them up to the best advantage; and a little help for them would not be out of place. Where fall pasturage is plentiful it would be a very easy matter; but where there is none, feeding must be resorted to in order to get them in good shape for winter. When such colonies are received from the express office the first thing to do is to get them out of the shipping-box and into your hive.

The best way to do this is to sprinkle from one-half to a pint of thin sugar syrup through the wire cloth, on the bees; and while they are filling themselves with it, carefully remove the wire cloth and the sticks that hold the frames in place. Have your hive placed where it is to stand permanently, and then carefully lift each frame and set it in your hive, placing them to one side of the hive, with a division-board next to them to keep them warm, and from running all over the hive. The bees are now in your hive, and to make them boom is next in order.

It would be best and cheapest to have on hand at least three frames filled with foundation, though empty frames will do; but it will take more time and more sugar. The next thing in order is the feed; and probably the best thing would be a syrup made after the plan given by friend Doolittle on page 762, Nov. 15, 1884. This syrup does not candy in the combs; at least, not as much as honey. I give the plan for making it, in his own words, so it surely will be right:

"Fifteen pounds of water was put into a large tin dish, and brought to a boil; then 30 lbs. of sugar was poured in and stirred for a moment till partially dissolved, when it was left over the fire till it boiled. Upon taking from the fire, 5 lbs. of honey was poured in, and the whole stirred enough to mix thoroughly."

Commence by feeding about one pint of this syrup every night, using any kind of feeder that you may prefer. After feeding four or five nights, spread the combs in the hive and place one of your empty frames, or one filled with foundation; and when this frame is well along toward completion, put in the second and then the third, putting in frames only as fast as the combs are built, or the foundation drawn out. If you had a three-frame colony to begin with, probably these three extra frames would be enough; but four or five would be better. If you use foundation, the combs, of course,

will be straight; but if you do not, you must watch and see that the bees are building them so; and if they are not you must help them.

When they have three or four frames well filled with brood you can begin to feed heavier, so that they will have at least 25 lbs. of the syrup stored and sealed by the first of October for winter use. If they are in a chaff hive, with good chaff cushions over them, they are ready for winter; and if they are not, you must fix them up in some way so they will keep warm and dry.

Some may ask whether it would not be cheaper and less trouble to wait until spring, and buy bees then. It might be that it would, but I think that the experience a beginner would gain by building up nucleus colonies in the fall would well repay them for their time and trouble; and if they are careful they would have good strong colonies to begin with in the spring.

Remember, you must feed only at night, and be up early in the morning and remove the feeders, for your neighbors may have bees that would like the fun of robbing your bees. F. W. MOATS.

The Bend, Defiance Co., O., July, 1886.

WHAT SHALL BE DONE WITH UNFINISHED SECTIONS?

CONTRACTING, REVERSING, ETC.

GLEANINGS is at hand; thanks to Jas. Heddon for his two last articles. Now will he tell us what he does with unfinished sections? I always used wood separators till using his 7-foot sections and no separators. This year, for the first time I have got along without separators in some cases and get fair sections; but in putting back those part full they will be bulged badly. If a part of a section is capped half way, the rest will be built beyond the part capped.

CONTRACTING, AND RESULTS.

All hail to bee-men like Doolittle who care enough for those new in the business to give their experience. Will a contracted brood-chamber work in all localities? I contracted to six and eight frames— $9\frac{1}{2} \times 14\frac{1}{2}$, when I put on sections, and, in 60 colonies, I had 500 sections that were spoiled with pollen. The sections I used were $1\frac{1}{2}$ and $1\frac{3}{4}$, with and without separators, and I saw no difference in the amount of pollen.

Heddon's reversible frame is the best, I think. Will not reversing frames cause bees to store pollen in sections? What do you think of a bee-keeper who sells his honey just as he takes it from the hive, in wide frames, and lets the grocer tear out the sections and bruise more than half? He takes GLEANINGS too. I sold seraped sections at 13 cts. in the same town in which he sold his at 10 cts.

I look for the open-side sections to replace all others.

The season opened nicely. Swarming began early, and kept up all through clover bloom. I lost a good many queens by swarms going into other hives. I clip all queens. I have no trees for them to alight on. I tried

HEDDON'S PLAN

of swarming, and did find chilled larvae in the old colony. It leaves the old one very light before moving to a new stand, in some cases.

53, 70—J. C. STEWART.

Hopkins, Mo., July 21, 1886.

WHAT TO DO, AND HOW TO BE HAPPY WHILE DOING IT.

Continued from July 15.

CHAPTER XXI.

The earth is the Lord's, and the fulness thereof.—PSALM 24: 1.

Many kind comments have come in regard to the former chapters of this my book on gardening; and one or two have complained that I have not given sufficiently the dark side of the matter. Well, although I have touched upon it all along, perhaps I have not given it enough in detail; and the past few weeks have given me an opportunity of writing a good chapter on the dark side. Up to July 1st we had hardly enough of *any thing* in the way of garden-stuff. But after that, first lettuce began to be somewhat of a drug on the market. We wrote to the city markets, but we were told that it could not be used at all. Then green peas began to be produced in larger quantities than we could make use of. A trial shipment of ten bushels was sent to Cleveland. They brought 70 cts. a bushel, and it cost 25 cts. a bushel to pick them and put them on the cars. After paying freight, but little was left. For a time we thought beets were always a great staple, and there seemed to be no such thing as getting enough. Now we have, however, perhaps 50 bushels, and no one wants them; that is, we have not yet found a market for them. None seem to be spoiling, however, and we are inclined to think the people will want them again after a little while.

The most discouraging article, however, has been early cabbages. As no such thing has ever been raised in Medina County, I, contrary to the advice of some of my helpers, planted largely. I expected to compete with the Southern trade. Well, my cabbages have done finely. I think that fully 90 per cent of the plants have made beautiful hard heads. We started them first on the wagon at 3 cts. per lb.; \$2.50 per 100 lbs., or \$40.00 per ton; and, by the way, I wish to say right here that it seems to me the only just and fair way of selling such stuff is to sell it by weight. We now sell cucumbers by weight, tomatoes by weight, cabbages by weight, and I begin to think the proper way would be to sell celery, bunch onions, and bunch beets, at so much a pound.

Well, when the cabbages didn't bring 3 cts. per lb. readily, we reduced the price to 2 cts. per lb.; \$1.75 cts. per 100 lbs., or \$30.00 per ton. This gave them another start; but for all that, I found we were not selling one-fourth as many as were getting mature.

Some heads bursted open, or snapped with a report, while we held them in our hands. Others began to show symptoms of decay. Two of our best salesmen started for a large town 20 miles distant, with a two-horse load of cabbages. They did not sell enough to pay for their own time and the team. Finally we sent some to Cleveland on commission. They reported that the city was full of cabbages, and that they could hardly dispose of them at any price; and finally they were sold for just enough to pay freight and commission. At the same time that cabbages were getting to be so plentiful in our town they could hardly be given away, potatoes dropped rapidly from a dollar to 75 cts.; then 60 cts.; then 50 cts.; and a day or two ago I bought a load of them for 35 cts. per bushel. We can never raise potatoes on our grounds for 35 cts. per bushel; that is, it does not seem to me that we can. Apples have hardly brought 50 cts. a bushel at any time in our market; and yesterday I bought a load of nice picked apples for only 10 cts. a bushel, the owner saying he would rather sell them at that price than carry them home again. The total receipts of our market-wagon, many days, would not pay for the help on the wagon and on our ten acres, to say nothing about the cost of tools and manure. To add to the difficulty, others are bringing in produce without finding sale. A man wanted to sell us some "Jersey Wakefield" cabbages. I asked him how he came to have them so early. He said that he raised them from plants he bought of us, *of course*. When urged to have us take them off his hands at some price, I asked him if he had been to the neighboring towns, and he said he had supplied them with cabbages in every village and town within ten or fifteen miles of where he lived. What is to be done? I thought of reducing the wages of my helpers; but as I considered them one by one, I felt as though I hadn't the heart to ask them to work for less wages than they were already receiving. Our poor and inefficient help has all been weeded out. We have none but good men and good boys; that is, in their respective lines. The trouble is, that peace and plenty reign throughout our land, and everybody has an abundance of every thing without buying very

much. Is it a trouble? Why, I think not. A drought or a flood, or something of that sort, might have enabled me to get better prices for many of my products; but surely no sane man would wish for such calamities to come on himself and his neighbors. Well, what did A. I. Root do in such a state of affairs? I studied the matter over carefully, and told my hands just how we were situated. To some of them who, I felt, sympathized with me, and with whom I felt it would be wise to state it so, I spoke something as follows: "Friends, we shall have to make it a subject of prayer. Let us ask God to give us wisdom, and tell us what to do in this crisis." Before asking God's help we want to be sure that the business we are engaged in is one that is pleasing in his sight. In my own case I prayed that God might help us to dispose of our produce, not solely because of the money we wish to make, but because I felt my undertaking in writing this book was a right and proper one, and that the few dollars that I might make in market gardening were a very, very small item when compared with the matter of setting our American people at work at their own homes in tilling the soil. Now, I have had so many answers to prayer, especially where I have prayed over business matters, that I presume I ought to have had faith that God would help us in this emergency as well as in all the others scattered along through the years I have been trusting *him* and going to *him* for aid and guidance. The only doubt that troubled me was as to whether my undertaking was really right or not. There are some features of the business that seem a little questionable. For instance, I had cut off the trade of the grocers of our town not a little. Then, again, I had, to a certain extent, harmed the very class I wished to help; that is, the farmers round about us who have been in the habit of selling produce in our town. We have been raising so much of certain vegetables that it left them no chance to sell any at all. I prayed over this, and prayed for them as well as for ourselves and our plans.

At the convention in Detroit, quite an animated discussion came up at one time because our bee-journals showed too much of the bright side of every thing; and a good honest friend of mine from Canada declared that, whenever I touched on the subject of "blasted hopes," I always wound it up with something bright and cheerful; that is, my black clouds all had a silver lining. I have

thought of this a good many times, and I do not know but that I shall have to plead guilty, at least in this way: I do believe that God intended from the beginning that all of our black clouds should have a silver lining, and that, through great trial and tribulation, should come great victories and happiness.

When I fall I shall arise; when I sit in darkness, the Lord shall be a light unto me.—MICAH 7: 8.

Now, I do not mean to say that things changed *right off* as soon as we commenced praying. For a time it seemed as if they went on just as before, or even worse. This was no new experience with me. I knew already, or at least I certainly ought to know, that, if our undertaking were a right and proper one, and that, if our prayers were in a line with the text, "Thou shalt love thy neighbor as thyself," an answer would certainly come. One of the obvious ways to dispose of produce is to advertise; but I could not advertise cabbages to the friends who read GLEANINGS. The expense of transportation would be, to at least most of you, more than they are worth. The only avenue open was our county papers, and so in went an advertisement something like this:

JERSEY-WAKEFIELD CABBAGES.

We have a fine lot of these excellent cabbages now ready for delivery. The price will be 2 cts. per lb.; \$1.75 per 100 lbs., or \$30.00 per ton.

We then went to the grocers of our town, and told them that we would furnish them fresh cabbages, cut to their order in any quantity they wished, at the ton rate. At first they did not seem inclined to handle our cabbages at all. They could get them from Cleveland, even cheaper than we could raise them; but when the country folks began to call for "Root's crisp hard cabbages," they began to give us some orders. At the same time, farmers stopped their buggies as they were going past, and asked for a cabbage or two. They soon discovered that it was indeed a fact, that our cabbages, fresh from the field, were a good deal nicer than any thing that had been shipped in from the large cities, and a good healthy trade started. I was so anxious to have the crop saved, that I gathered a great number of them myself, going over the field, and selecting first every one that looked as if it would burst very soon. Where they had actually snapped open, we offered them at a discount; where badly broken, at half the advertised prices. Now, these broken ones are as good as any for immediate use. In fact, they are usually the finest and most crisp cabbages in the field; and many peo-

ple who wish to economize soon took advantage of this, and we began to see daylight in the cabbage-trade. At the present writing, very few have been lost. Where they are badly bursted, and have become discolored by the sun and air, we give them to the poultry.

Within five or six miles of us is a beautiful lake which has lately become quite a pleasure-resort. Our advertisement called the attention of the hotel-keepers at the lake to our business; and when men came to our gardens and began to make offers for the stuff just as it stood in the field, I began to feel indeed that God had heard our prayer.

"How much will you take for that lot of celery, just as it stands right there in the dirt?" said a customer a few days ago.

I told him that, as it was all we had that was really fit to put on the wagon, I could not take less than 5 cents a stalk. He did not take it at that figure, but thought he could give 4 cents. Now, none but those who have been through similar trials, and it seems to me that none but those who have been praying over such matters, can realize with what feelings I thanked God inwardly for this one answer to our prayers. Instead of having to draw our stuff away many miles, and then, may be, bring it back again, here were offers for it, and very fair ones, just as it stood in the ground. The same man wanted 20 dozen ears of sweet corn per day, and offered to go to the field and take it himself if I would let him have it at 8 cts.

a dozen. While I write, another call has been made for sweet corn, and three men have gone over our whole field. Each man takes two rows; and as they pick it off it is all tossed into the row where the central man walks. A boy follows him with a couple of baskets, gathers it up, and puts it in the wagon; and as soon as the corn was loaded up it was sold. I recognize it as an answer to our prayers, and I thank God for having sent us these customers; yet bear in mind, dear friends, that God could not consistently have answered this prayer unless we had first done our part by having nice corn, nice celery, etc.*

The celery was banked up and nicely bleached clear to the tops. The corn was on ground that was carefully prepared and well manured. Those who had a taste of it wanted more; and so it must be through all our work. There is no excellence without great labor. He who expects God to listen to his prayers must be consistent, and do his part toward making it consistent for God to answer his prayers. I do not wish to have you understand by the above that we are now making money by market gardening. Our daily receipts pay for all our help, and some more. But about all that we can say is, that here and there are glimpses of sunshine, and pretty fair indications that we shall ultimately make our work a success financially. The following chapter will serve, perhaps, to make it a little plainer as to how it is to be done.

CHAPTER XXII.

He becometh poor that dealeth with a slack hand; but the hand of the diligent maketh rich.—PROV. 10:4.

No doubt some of the friends who have read thus far in my book will conclude that I am trying to teach some things which I do not understand very well myself. Well, some such thoughts as these were in my own mind a couple of weeks ago, and I therefore concluded that, before going any further, I would invest some money in visiting the most successful market-gardeners of the world. As our good friend A. N. Cole, whom I have mentioned here before as the father of the "New Agriculture; or, the Waters Led Captive," claims to have some of the most productive land on the face of the earth, I concluded to pay him a visit also. I thought I would visit father Cole first, and then go

afterward to see the most successful market-gardeners, that I might be able to judge how much he has accomplished at his home on the hillside.

Toward the close of the 26th day of July it was my fortune to look upon said hillside.

*A postal card is handed me while I am reading the proof of this page. It is as follows:

Wellington, Ohio, Aug 10, 1886.
Please ship us four barrels best cabbage. Those you sent were fine; let this shipment be as good.

BOWLBY & HALL.

A few more such orders, and our whole crop of cabbages will be under control. After seeing them spoiling on our hands, can you understand that the above postal is a glimpse of sunshine—yes, sunshine among such commonplace things as a field of cabbages—the sunshine of God's love to his children, and to all who look to him in their troubles and wants?

By the way, round about the town of Wells-ville, Allegany Co., N. Y., there are a great many hillsides, and some of them are pretty long hillsides, as well as pretty steep. Father Cole's garden is, some of it, located on ground so steep that it would be difficult for a horse to work it; accordingly it is mostly worked by hand. One of the first things I noticed were springs at the base of the hill—not natural springs, but *artificial* springs. Water was running from four of them at the time of my visit, and the four together made quite a little rill that passes along by the roadside. He informed me that, during the most severe droughts of the present season, some water was all the time coming from these artificial springs. He has just been making a larger reservoir at the upper edge of his five acres, and pretty well near the summit of the hill. This reservoir is to catch enough rain water so as to afford a constant supply to the covered trenches below it from one rainfall to another—or, at least, that is the theory; and I found water standing in the trench while I was there. Now, it occurred to me that this water, instead of passing along near the surface, would sink down into the gravelly soil and go straight into the hill, without watering the plants at all. Father Cole says, however, that this is a mistake. There is very seldom a hillside found so porous that the water runs straight down into the earth, instead of passing slowly near the surface, to the bottom of the slope. Although there had been quite a hard rain only a few days previous to my visit, no gullies and no avenues where the water had ever run over the surface of the earth were visible anywhere over his covered reservoirs.

It would be impossible to mention the long pleasant chats we had during the 24 hours I remained. Father Cole has been studying on this subject more or less since the time he was ten years old. His mind was first drawn to it by a paragraph in Morse's Physical Geography, under the head of "China." The statement is to the effect that the Chinese have for ages excelled in agriculture. They build large reservoirs on the summits of the hills, to catch rain water, and this rain water is allowed to pass slowly downward over successive terraces, so as to irrigate the vegetation from the summit of the hill to the valley below. Well, during these years that have passed, friend Cole has been a deep and diligent student of nature. Here is one of his theories: When the country was new, and our hills and mountains

were covered with forests, the surface of the ground was protected by a carpet of leaves. When the rain falls on these leaves it is arrested until it can sink slowly into the earth, watering the roots of the trees, because these leaves hold pretty much if not quite all the water that falls on level plats on the summits of our hills, or even on high ground. The water from these rain-falls accumulates in the shape of bogs, morasses, or wet, swampy pieces of ground. From these wet elevated places, the water slowly descends until it strikes an impervious subsoil of clay, or, as is often the case, a rocky formation over which it flows, dropping over one shelf after another until it comes out of the hill in the form of springs. Man now steps in and clears off the forest. In many places in York State the hills were denuded, simply to sell the timber for firewood to the railroad companies during the time they ran their locomotives by wood instead of coal. After the forests were gone, the leaf-supply was stopped; and in a few years the ground became bare, so that it was cut up and gullied by each heavy rain. The rainfall in this case, instead of going into the ground, washes away the vegetable mold and vegetable soil, and carries it into the creeks. A clover sod might do something toward preventing this great damage and loss to the farmer; but clover sods are the exception, not the rule. The recent rage for tile drainage now comes in (draining off these wet spots), striking another blow at our hillside springs, besides going still further and damaging our wells. This reminds me that Prof. Cook remarked, recently, that he was *afraid* of the results of tile drainage. In his own neighborhood they had been congratulating themselves on draining off a wet piece of marsh that stood on elevated ground. But about as soon as they had the work nicely accomplished, the wells, one after another, in that vicinity, began to dry up and fail. It seemed to me at the time it could not be possible that our wells should be dependent on such marshy places and stagnant pools; but Prof. Cook gave it as his belief that they were. Father Cole, to convince me by an object-lesson, asked me if I could stand a tramp of a mile or two over the hills. Of course, I could. You, my friends, will know that, even if father Cole didn't. First we visited a beautiful soft-water spring, where water enough was running out of the end of the wooden trough, I should think, to fill a two-inch auger-hole. "Now, my friend," said my teacher, "I

will show you just where that spring water comes from; nay, further: I will take you along the surface of the ground over its path from where we are now, to its fountain-head."

Of course, I wanted to know how he could follow the mountain stream where it was far under ground, through the hills. Said I, "Are you going to take a hazel-bush or peach-tree crotch, and make it bend down when you go over the subterranean rivulet?"

I wish you could have seen the old gentleman as he stopped and turned around and looked me full in the face, to give emphasis to his remarks.

"Mr. Root, unprincipled men who have, by accident, found the same law that I have discovered, have for ages made this innocent crotched stick an excuse for swindling the community. It is a big humbug and a swindle. The crotched stick does not help them a particle, but they use it only for an excuse to get money, and to blind the people. See."

We were going up through the forest, in a little sink of ground, where water comes down from the hills during very wet weather.

"Our underground brook is beneath our feet."

"But how do you know?" I asked.

"I know by the lay of the land, and I have proved it over and over again by digging down until I found the stream; but I can convince you in a few moments, without digging down."

We were now in the dense woods, far up in the hills, and the ground was becoming so damp that occasionally a drop of water hung on the under side of the shelving rocks. By and by it dripped from one stone to another; further on, and it trickled; and still further it was a little rivulet; further still, and we found a level sunken spot on the summit of the hill. Beautiful ferns and mosses grew here; and at one spot the water stood like a tiny lake.

"There," said my guide, "is the fountain-head of our spring. Put in tiles here, take away the water, and you have a few acres of beautiful ground, until you have exhausted the vegetable mold and decayed leaves on the surface of the ground, but—*our spring is gone.*"

I was glad to tell friend Cole, just about at this point, that I could tell him something also. Hundreds of loads of moss, or sphagnum, were at our feet, and yet he had never made any use of it for his "New Agriculture." Now then: Instead of using tile-drains to let this water off from this swamp

I have described, or from thousands of other just such swamps, father Cole would let the water be where it is, simply dropping it below the surface in trenches filled with stone, shingling over these trenches, and having all the benefit of the rich soil you would get by tile drainage, or the *still further* benefit of letting the plants extend their roots down into the water. With the tile drainage you run the water with all possible speed down the hill into the river, and it is lost. With the "New Agriculture" you drop it down a foot or more and keep it to serve you during severe droughts when they come, and to water all the ground below it, clear down to the lowermost valleys. Do you see the magnitude of his undertaking?

Let me depart from the subject of agriculture a little to tell you something else that may be done. The town of Wellsville, at the foot of these hills, has a printing-office, the presses of which are run by a water-motor. This water-motor is not much larger than a good-sized water-melon.

"Friend Cole," said I, "how high up is the fountain-head that supplies this water-motor?"

"One hundred and ninety-six feet."

Indeed, with *196 feet fall* it is no wonder that that little motor, fed by a quarter-inch pipe, runs the printing-office. Now, father Cole's idea is, plenty of water falls on these hilltops (providing, of course, we husband the melting snows of winter as well as the summer rains) not only to perfectly irrigate all the cultivated land, but to run water-motors enough to *supersede steam*. Over father Cole's mantelpiece hangs a life-sized picture of Horace Greeley. Well, I took friend Cole to task a little, because of his extravagant claims (superseding steam, for instance, as above).

"Why, Mr. Root," said he, "there are possibilities growing out of this 'New Agriculture,' so wonderful that I did not dare to put them in my book."

One of these possibilities has something to do with the picture of our good friend Horace Greeley. Mr. Greeley visited California, as you may remember, and one especial hobby of his was that of irrigating the Great American Desert. Perhaps many of you are aware that it is now actually being done, and that America won't have any "American Desert" at all after a while, if we keep on. Well, Horace Greeley visited and looked upon the great mammoth red-wood-trees of California. Not very far away from these great trees he noticed a river

that ran into the ground and disappeared, something the way they do in the region of Mammoth Cave. When he got home he confided to friend Cole that it was his honest opinion that those trees were nothing more than common redwoods; that their great size was not owing to the species at all, but to the simple fact of having a subterranean stream under their roots, 10, 20, or may be even 40 feet down, where they drank both winter and summer, to their hearts' content, like the cucumber-vines in the barrel that friend Cole had when he was a boy.

Well, how about the five acres? how about the wonderful crops? how about making the steep and barren hillsides the choicest grounds for market-gardening?

To tell the truth, I was *somewhat* disappointed in the crops on that hillside. A great portion of it was devoted to strawberries, and the plants were really wonderful—larger than any thing I have ever seen in the way of strawberry-plants before. It is, however, well known that the strawberry luxuriates in plenty of water. The raspberries were about such as we have here at home—I think no better; but it should be remarked, that they have had a terrible drought this season, and the ground where they stand has had but little manure. I saw plum-trees loaded with beautiful plums, and found no trace of the curculio. Friend Cole thinks this is owing to his reservoirs of water beneath the trees; but I can not quite understand how it should banish the curculio. His quince-trees are covered with beautiful large fruit. His peas, which I saw in all stages of growth, from those just breaking ground to those just ready to pick, were equal to any I ever saw; but I believe considerable manure was used with them. His potatoes were fair; but the yield where we dug some for dinner was not extraordinary. They were not nearly ripe, however. He has used very little manure—nothing like what market-gardeners use; and in view of this his achievement is certainly wonderful. Near the house an iron pipe comes right out of the side hill. By opening a valve this gives a stream of water at any time—the water coming from the covered reservoirs. It seems to me that great results are to be attained by pumping liquid manure into the upper reservoirs; and if the sewage from a village, town, or city, could be thrown into these reservoirs, I think something wonderful might be accomplished. Rank-growing vegetation would consume and eat up all the filth, in my opinion.

After leaving friend Cole's I started for the market-gardens in the vicinity of Boston. As the newspapers have given us glowing accounts of the work of Mr. Rawson, at Arlington, in the suburbs of Boston, this was my first point; and for once in the world I was abundantly satisfied. I have mentioned before, that it is only *once in a great while* that I see plants make a growth to satisfy me. At Arlington, every thing grew under the high-pressure principle. The ground is a dark sandy loam, near the sea-coast; but manure has been put on it year after year to such an extent that many of the grounds seem more like a barnyard than a field; in fact, the smell of ammonia can be perceived, even in passing along the streets. Market gardening seems to be a matter of course with everybody near Arlington. Elegant residences line the streets on either side. Well, at the back of these residences, and often between them, vegetable-gardens were always seen; rows of celery, long enough to satisfy even friend Terry; Henderson's Early-Summer cabbage, with heads so large it would seem a good man is needed to lift even one of them; and the most interesting part of it all to me is, that every foot of ground produces something—not only a plant, but a *prodigious* plant. In Arlington there are no fences, except, indeed, the tight board fences made to keep off prevailing cold winds, and these are not put up as boundaries, nor to keep out intruders, but simply for the purpose before mentioned; therefore I found nothing to hinder my going in and out among the vegetables wherever I chose; in fact, well-beaten wagon-tracks passed into the fields and gardens every now and then, for the purpose of carrying manure and bringing out the produce. As I passed along the street I caught a glimpse of a plant showing wonderful luxuriance, and one which I thought was new to me. A wagon-road passed through at one side of the grounds of this beautiful residence, so I followed it; and when I stood among the plants I found they were simply egg-plants—egg-plants certainly a yard high, and more than a yard across. There was perhaps half an acre of them; and every single specimen on that half-acre was a wonder. The same is true of early sweet corn, heads of lettuce, rows of celery, hills of squashes, etc. They have not yet arrived at such perfection as to have a prodigious head of cabbage exactly like its neighbor on every spot where a cabbage is planted, but they come pretty near it. Great wagons were in

the fields loading up these wonderful cabbages. The cabbages were planted four feet apart, and yet the leaves covered the ground so completely that not even a wheelbarrow could be passed between the rows. Accordingly they have an odd sort of a wheelbarrow without any wheel. Instead of having a man at one end and a wheel at the other, they have a man at each end, and on this arrangement the cabbages are carried to the road alongside of the patch.

On the next page I give you a cut which illustrates very well the appearance of the market-gardens around Arlington. The cut was furnished me by the Planet Jr. folks, and was made to advertise their implements; but you can overlook the implements, and you have a very good idea of the Arlington market-gardens.

Everybody seems to be very friendly and pleasant in Arlington. In going in and out among the shrubbery, in my inquisitive way, I frequently passed by the occupants of these fine places. While I was examining the egg-plants, a young lady eyed me curiously; but when I explained that I was attracted by the wonderful growth of their beautiful plants, she invited me to make myself at home, and examine any thing that I was curious about. At one point I was attracted by a beautiful flower-garden on one side of the road that passed into the grounds, while across the track were rows of beets in all stages of development. Some of the beets were just breaking through the surface of the ground. A rod or two further they were two or three inches high; still further, nearly fit for market; and finally there were long rows ready to pull. The seed had been sown at different times, so as to give the effect of rising in steps — one step above another, so that, after one sowing was marketed, the next came right after it, and so on. Now, the flower-garden was beautiful; but this little field of beets I think was one of the most beautiful sights I have ever beheld in my life. Of course, hand-weeding is required where every inch of ground is cropped so closely; and in two different places I saw women from the old countries down on their knees pulling out the weeds. I like to pull weeds where the ground is as mellow as it was there, and so I stooped down and pulled weeds a while just to see what fun it was. It had rained the night before, and the weeds came out so easily that it *was* just fun. Who would not like to do gardening with such a soil as they have in Arlington? Well, I reluctantly passed by the beets.

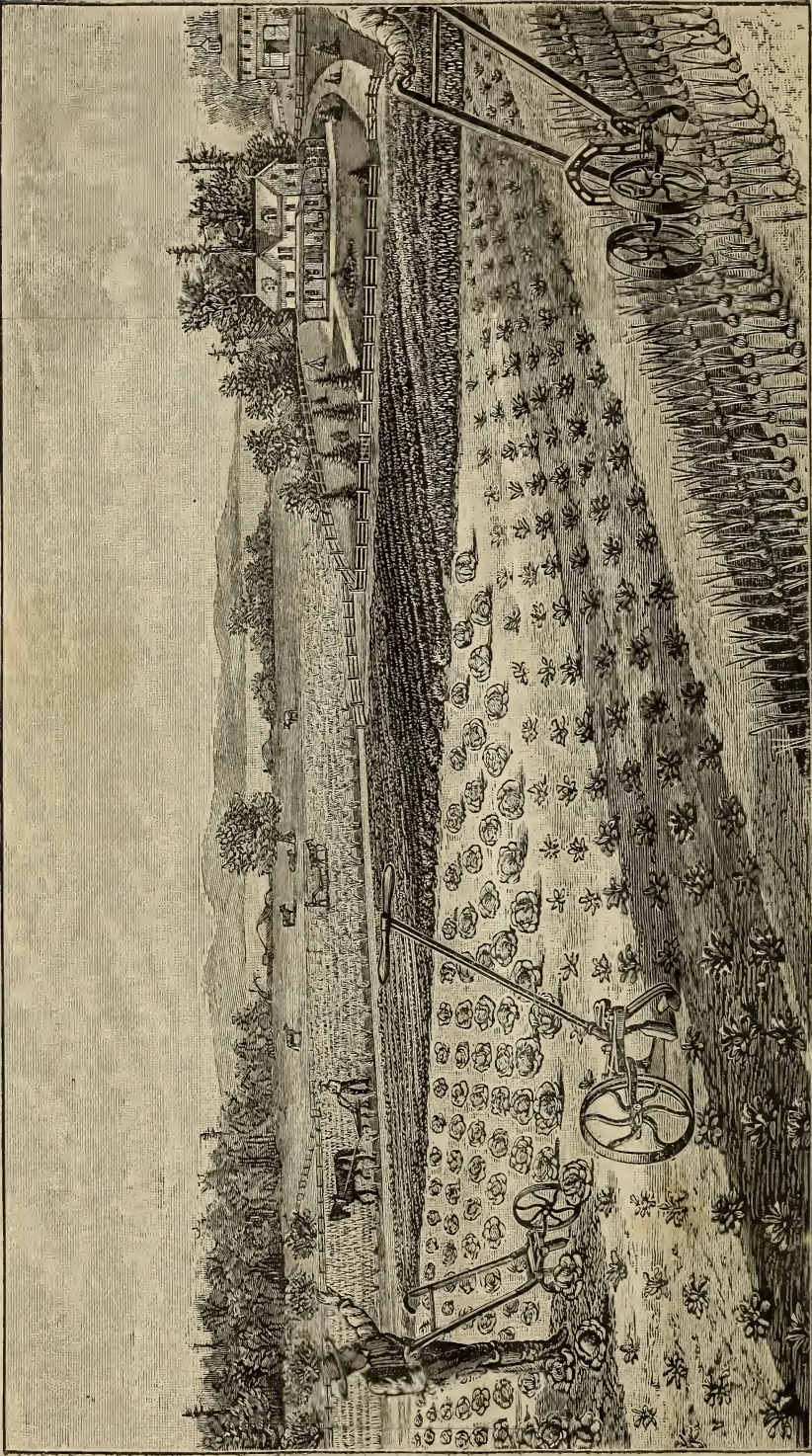
Perhaps I should add, that not a weed is to be seen, except among seedlings just coming up. When they get older, the ground is kept almost absolutely clean by the use of scuffle-hoes and similar tools.

Further down I met a man at work on the iron pipes used for irrigation. At Arlington irrigation is used whenever necessity demands it. If it rains, well and good; and if it does not rain, they run water between the plants in the furrows. With celery, a deep, narrow channel is plowed, within about one foot of the roots. Water is taken to the highest point in the rows, and allowed to descend both ways. I explained to the man at work at the pipes that I was attracted by the beauty of their grounds. He bade me welcome, and regretted that he hadn't time to show me around; but he said, "Father is over there in the field; I think he would be glad to talk with you."

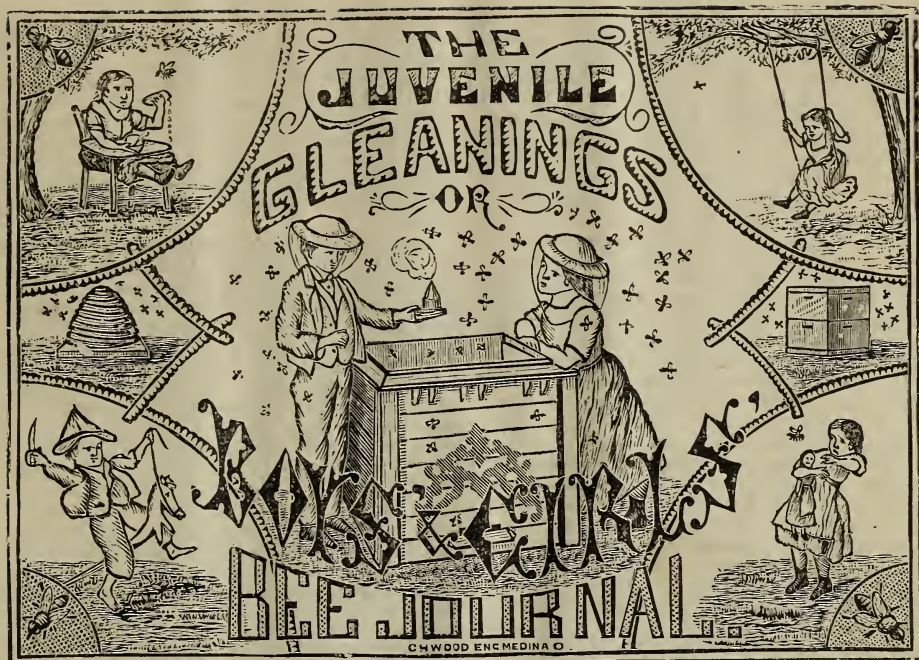
As I came near the old gentleman, I discovered he had a hoe about twice as wide as any we use. The blade, however, was quite narrow. Well, in this soft soil, with such a hoe, even the old gentleman could cut up weeds very rapidly. I found him to be quite aged — so old that his voice trembled quite perceptibly when he spoke. He seemed pleased to find me so much interested, and to know that I was from Ohio. He said, when he was a boy he too wanted to go to Ohio; but it was then away off in the wilderness, and he found that all the money he could rake and scrape together would but just take him there; and then if he didn't happen to like the far wilderness he wouldn't have any money to get back with, when he decided to stay and make garden on the very patch of land where we were standing. He was one of the pioneers in Arlington market gardening. We passed a field of early sweet corn. It was a wonder to me, for every hill had just so many stalks; each stalk was just so high, and had just so many ears on it, and the quantity of ears was so great that the stalks were bending over — each hill toward its neighbor, and each ear seemed to be plump and full, just like every neighboring ear. I expressed surprise, and asked him how many years he had been cultivating that kind of corn, for I naturally thought it must be some new-fangled wonderful yielder. I was a little surprised when he replied, "Nigh on to forty year."

As this chapter is getting pretty long, and as I gleaned a good many things that I want to tell you of in that talk, I think I shall have to reserve the rest for another chapter,

To be continued Sept. 15.



MARKET GARDENING—A SKETCH SHOWING THE WAY THE GARDENS LOOK AT ARLINGTON, MASS.



He that is faithful in that which is least, is faithful also in much.—LUKE 16:10.

MYSELF AND MY NEIGHBORS.

Who is my neighbor?—LUKE 10:29.

IT was toward evening, just after a beautiful summer shower, that I was on the street-cars in the beautiful town of Arlington, in the northern suburbs of Boston, Mass. The whole place was almost a garden of Eden to me, on account of the vegetable-gardens that spread out on every hand. I had succeeded in finding just the spot that I had for so many years longed for—the spot where gardening is conducted up to the highest standard of intelligence; for it was just outside the limits of the great city that some of the Massachusetts people entitle the “Hub of the Universe.” I felt as if I could have walked the whole thirteen miles to the city; but it would have taken too long a time, therefore I stepped aboard of a bright, new, spacious, and airy street-car, such as they have in the suburbs of cities. All at once a vision sprang up before us, so bright and beautiful I almost wondered if it could be real. A florist had arranged, on a beautiful lawn that sloped toward the street, figures of wondrous beauty, all made by planting different-hued coleuses. The recent shower had washed every particle of dust from the beautiful foliage, and the colors flamed out like those of a rainbow. The thought instantly sprang up into my mind, “A painting in which the colors are done by the finger of God.”

A good many things contributed to make me happy that July evening. The residences along either side of the street were most beautiful; and glimpses of long rows of cel-

ery-plants contrasted with rows of different kinds of lettuce between them; then rows of other vegetables, as they flashed from the open spaces between the dwellings, which were quite a good distance apart, all contributed toward making me feel as if I had been almost transported to some fairy land.

Just as the work of the florist passed from view, a pair of spirited ponies came up from behind us on the other side, with a light, graceful, and fantastic carriage. The horses were a pair that might please the eye of any lover of the horse kind. The buggy might also call forth expressions of wonder and delight, it was so unique. The occupants were a couple of young ladies; and at first glance one would be inclined to pronounce them people of rare intelligence, and from the higher circles in life. They found acquaintances on the street-car, so they drove alongside while they chatted. My eyes first fixed themselves on the horses, then on the carriage, and finally on the occupants. I had been gazing in dazed wonder, almost, at the coleus-bed, and now I sat silent while I gazed for a brief moment at my neighbors opposite me in the carriage. Yes, I think they were my neighbors, even if they were beautiful—yes, wondrously beautiful. Jesus called our attention to the way in which God has arrayed the lilies of the field so that even Solomon in all his glory was not arrayed like one of them. Now, if God has given beautiful forms and colors to the floral and vegetable world—yes, even to the different forms of animal life (the horses at my side) is it any thing wonderful or strange that,

for some all-wise purpose, he has now and then clothed the human form divine with wondrous beauty? And when this beauty is accompanied by unusual intelligence, ought we not to pause and wonder, as well as give him thanks? Is it wrong to admire beauty? Surely not, providing that, while we admire, no trace of any feeling springs up that will in the least transgress the command, "Thou shalt not covet." Beauty is a dangerous gift, and so is wealth; and, my friends, let us pray that God may help us so to rear our children that they may safely be intrusted with wealth as well as beauty; that both sexes may consider all these gifts as coming from him, and be enabled to use them for his honor and his glory, and to lay them at the Savior's feet. I did not want to seem rude, so of course I was bound in courtesy to give these new neighbors of mine only a passing glance. They were utter strangers to me, and I do not think any thought entered my mind of wishing for even an acquaintance. They moved in one sphere of life and I in another. God wishes me to perform my allotted work as he wishes them with their beautiful turnout to perform their allotted work in life. It was not in my province to recognize their existence by word or action, unless by the brief glance I told you of; but it *was* in my province to be working for the Master, even at that very moment, and among these very neighbors, too, whom I had found so far away from my own home. Do you ask why? Listen:

While these thoughts were passing in my mind, the street-car stopped. As I glanced toward the platform I guessed the neighbors who stood there were a trio of young mothers with their home treasures. There were three of the mothers, and they had three or four of these treasures apiece; and said treasures were all jubilant at the idea of riding on a street-car. They had got on their Sunday best, and were sweet and clean and bright and happy. As there were but few passengers, each little one was permitted to have a seat and plenty of room to feel happy. As they took their places I gave them a welcome, and remarked that there were almost enough to start a Sunday-school. I could at once see by the looks that were exchanged how many of our passengers were interested in Sunday-school work. The car stops again, and a big lady looks with dismay at the prospect of no seat because they are all occupied by the prattling juveniles. The conductor finally remarks, "Here, you youngsters will have to stand up, some of you." Three pairs of fat chubby legs slid off to make room for the lady. I supposed she would, of course, take two of them in her lap while she made room for the third; but she did nothing of the sort. Even the sad and disappointed faces that were occasionally turned up toward her made no impression on her hard heart. Finally a curly-headed little boy about the size of Huber began to cry because he could not sit down. His mother by my side had one child already in her lap, and so I proposed to take him. She said he was quite bashful, and she was afraid he would not let me. I felt sure, however, I could make myself agreeable, and I did; and by

the time he was contentedly sitting on my knee, some other passenger took the hint and took one, and then the big lady volunteered to hold the remaining one. The little fellow was not so easily mollified. He sat on the extreme edge of the lady's knee, and hung his head in a sort of pout. Once in a while he cautiously turned his head enough to get a brief glimpse of said lady's face. It did not seem to reassure him, however, very much.

The shades of night are now dropping over us, and the little one has laid his curly head over on my shoulder, and gone to sleep. For fear he may take cold, the mother throws a light shawl about him. Her accent indicated German origin; and as I glanced from the little one's black curly head to the mother's curly head, almost like it, I became satisfied that at least part of the group had African blood in their veins. I was perhaps holding to my breast a little curly-pated boy-baby with negro blood in his veins. Well, what did it matter? Even if the parents *have* at some time in their lives done wrong, surely there was no wrong in this little one's heart, and who could think of blaming him for the existing state of affairs? My little friends, what Scripture text do you think came into my mind? "Suffer little children to come unto me, and forbid them not, for of such is the kingdom of heaven," Jesus said. He did not say a word about white children, Indian children, or negro children; and if *he* did not, why should I? and I decided in a moment that I was doing the work he had planned for me to do, and I felt happy in doing it.

Two days before, during the stage-ride from Lawson, Cattaraugus Co., N. Y., to Versailles, I passed through what is called the Indian Reservation. Many thousand Indians of different tribes from the State of New York have a tract of land allotted to them. They have farms, cultivate the soil, and raise crops; they also have schools and churches. When I was stopping at the station, a wagonload of them came to the store to trade, bringing in red raspberries picked in the woods and fields. They were intelligent, and looked and acted very much like white men and women. The young mothers had their little ones along with them. The children were dressed prettily, and their mothers seemed as anxious to have them behave themselves with propriety as any of our white mothers. The loungers around the village store said hard and uncharitable things about these people, especially of the mothers; but I am sure it is certainly not *all* true. My heart warmed toward the little ones, and I longed to see them brought into the Sunday-schools, and taught of Jesus their great friend. The driver told us that many of the older people still hold to their pagan superstitions, and that some of them still kept up the time-honored ceremony of something about burning a white dog. He said the only hope seemed to be in educating the children. He added, also, that depraved and dissolute white *men* were doing more harm in forcing themselves among them than the U. S. government and Christian people could do good. In our text the ques-

tion is asked, "Who is my neighbor?" Now, I can answer for myself, that all these of whom I have been speaking are *my* neighbors. When Jesus said, "Thou shalt love thy neighbor as thyself," I am sure he meant that I at least should understand him to mean not only the Indians, but the negroes also; and it thrills my heart to take a good strong man of either race by the hand, and to welcome him as a brother in Christ Jesus. While I regard them as brothers, and long to help them, and to lead them to the Savior, I think it wise and just that there should not be intermingling of the races; but for all that, He who has said, "They shall be my people, and I will be their God," I am sure meant to include all humanity, of whatever clime or parentage.

THE SOLAR WAX-EXTRACTOR.

HOW TO MAKE ONE AT A SMALL COST, AS MADE BY A JUVENILE.

ON page 587 of GLEANINGS for July 15, Ernest requested me to give a description of my solar wax-extractor. I made mine small, as I have but few colonies, and consequently but little wax to extract. Each little scrap of comb can be thrown in, and very quickly made into wax, with no danger of worms bothering. I tried cooking an egg in March, but I left it in too long, not being used to cooking, and I haven't tried it since, as I have been so busy. It was cooked "too much done." To make an extractor, any one who can handle tools can make one at a cost not to exceed 20 or 25 cents.

Use half-inch stuff. First get out two pieces, 6x10½ inches, for sides; two pieces, 6x7½ in., for ends; two pieces, 8½x10½ in., for cover and bottom. Make a frame or sash 8½x10½, outside measure, to hold a pane of 8x10 window glass; this is the size that I used. Also make a frame 9x7 to nail the tin to that forms the basket that holds the comb—one piece of tagger's tin, 8½x10½, to nail to inside of cover for a reflector, and another piece 7½x9½ to nail to the 7x9 frame, letting the middle sag down so as to hold the comb when thrown in. Perforate this with ½-inch holes to let the wax run through. Drive eight 2-inch wire nails for the frame to rest on, about half way down the inside of the box, and put a square tin pan in the bottom to catch the wax. The sash holding the glass lies flat on the box, and the cover shuts down on top of that. Strips of leather, ½ inch wide, for hinges, make it easy to raise either the cover or glass, or both, at a time; and a hook on the sash and one on the cover, and a staple in the box, make it easy to fasten. When neatly painted it makes a nice little ornament, and will pay for itself in a short time.

I have taken about 48 lbs. of nice comb honey in one-pound sections from my best colony, besides one new swarm, and more honey to come off yet.

FRED W. CRANSTON.

Woodstock, Ohio, July 20, 1886.

We are very much obliged to you for your very clear description of how to make a cheap solar wax-extractor. No doubt the one you made will do as good work as the larger and higher-priced one illustrated in GLEANINGS some months ago, though it will

not melt as large a quantity at a time. I do not know but that I would prefer the smaller one if I wished only to melt up little scraps and bits of wax such as accumulate in the apiary. It is more portable, and costs considerably less, and, better than all, the juveniles can make it. ERNEST.

HUNTING BEE-TREES.

PROOF-READING, AGAIN.

WE insert the following letter just as our little friend "elizzebuth" wrote it—pure and simple. To correct the mistakes would spoil its originality of style, and I think our little friends will have no trouble in making out the story. If the little folks wish, they can count the number of misspelled words and wrong use of capitals. There are other mistakes of a different nature, but you had better not "tackle" them. This will be good practice, and will help you to write correctly.

Father takes gleanings and i see in it where i can i Be lieve earn a Book By righting to you something about Bees. i think it is something new any way. pap ses it is any way; why papa you no is a grate Bee hunter. he went out yesterday to look for Bees and he found too sworms in one tree. the first sworm was a bout 16 feet from the ground, and then they was a division and then there was a nother hollow and it had another sworm in it; i was with him when he cut it. he thought it was an old Bee tree and we would get lots of honey But it was not. it was Both young sworms and one of the sworms was the little Black Bee and the other highest sworm was the larg Big italion and when he got the tree down and split open why the Bees Both mixed up together. well i asked pap if he was a going to put them all in one hive and he sed he was not if he could find the queens Both. well he looked around and seperated the bees till he found one queen and it was the little black queen. well he hived one sorm then he sed he must take them home before he could hive any more Be cause they was enough left yet to make a nother good soworm. well he took that sworm home and he told me to stay here till he would come back and for me to smoke the Beese and Bother them so they could not huddle to gether to git ready to leave till he come Back. well i don so he was not long gon he had not very far to go. well when he came back why it was about 12 oClock and he went to work to see wether he couldnt find the other queen he hunted a while and found her. well he ses lisey i found her. well i went to see her Be cause i had seen the other and i wanted to see what difference they was. well they was a Big difference she was i do Believe twised as Big and she was yellow queen. well now to live them. well he done that very quick and it was a average sworm pap sed. well he had not more than got them in the hive till a long comes a nother Big swarm and we could not keep them out of the hive they lit on the hive and pap tried to keep them out But all was in vain they was Bound to go in. well they went in and they filled the gum purtey near to the Brim. well he took them home and put them on a stand and the next morning he looked under the hive and found his i talion queen ded and he was vext a Bout it and now the Bees are working and appeare to Be

doing well. he ses he is a going to get a nother ital-ion queen.

ELIZZEBUTH.

Thank you, "elizzebuth." I am sure no one will doubt that you were an eye-witness, as we call them, of all that you report for the press. I will say for your encouragement, that your letter is no worse than the average juvenile letters. With our present system of spelling it is a wonder that the little folks do as well as they do. ERNEST."

JAPANESE BOYS AND GIRLS.

BY ONE WHO HAS BEEN AMONG THEM.

MR. ROOT:—After considerable wandering we have settled down to a quiet country home in a small town. The seminary which I attended in Reading will be removed here next autumn, when I shall attend it again.

Since coming here my brother thought he would like to keep bees; but as he has had no experience whatever in that line, could you please recommend a book for him to read, or give him a little advice how to go about starting? He is very anxious to keep bees, but I don't think he has ever been in an apiary or seen much about bees.

My thoughts often revert to Japan, and I think of the jolly times the boys and girls there are having during this season. About a month ago was the time for their temple festivities; and though June is the month for general wet weather, regardless of rain they celebrate their religious holidays with great zeal. Great carts drawn by oxen, and sometimes men, are festooned with various paper decorations in the form of fringes and scenery; and Japanese idols, with hideous faces, are taken through the streets. A band with drums, bamboo fifes, and violins, is usually found on the cart, and by its music (?) draws crowds of eager children who shout at the top of their voices, all together making a very noisy procession. Huge casks of wine, profusely decorated, or small temples are borne on men's shoulders through the streets, preceded by priests, who ask alms as they pass. Every one, in whatever circumstances he may be, is expected to contribute something, and also to be dressed in a new suit of clothes. The Christians often get into difficulty in that way, and the house of one of our converts was damaged considerably because he did not give any money to the priests. The little boys procure smaller casks, and carry them about in a wild manner, trying as best they can to imitate their drunken seniors by loud talking and foolish gestures.

Large, fierce-looking wooden dragon-heads, with long draperies of coarse green cotton, are sometimes taken through the city. They, too, are followed by long processions of men, women, and children, some of the latter finding employment in fanning the "dragons" with paper fans or tufts of feathers or hair. You can imagine that the youngsters enjoy these exciting times. But a far pleasanter way, to us, is practiced about the middle of July, on the evening of the second Saturday after the Fourth, when the government has public fireworks displayed on the river S— running through Tokio. On this occasion many boats full of people assemble on the river; other persons watch the works from the tea-houses on its banks, while the streets are crowded with the poorer classes.

The fireworks are well worth expending a little money on. They appear in various beautiful shapes, and are brilliantly illumined. The lookers-on seem to appreciate them fully, for loud shouts of applause, which can be heard for several miles, follow every especially attractive form.

ADA M. KRECKER.

Fredericksburg, Pa., July 20, 1886.



Every boy or girl, under 15 years of age, who writes a letter for this department, CONTAINING SOME VALUABLE FACT, NOT GENERALLY KNOWN, ON BEES OR OTHER MATTERS, will receive one of David Cook's excellent five-cent Sunday-school books. Many of these books contain the same matter that you find in Sunday-school books costing from \$1.00 to \$1.50. If you have had one or more books, give us the names that we may not send the same twice. We have now in stock six different books, as follows; viz.: Sheer Off, The Giant-Killer, The Roby Family, Rescued from Egypt, and Ten Nights in a Bar-Room. We have also Our Homes, Part I, and Our Homes, Part II. Besides the above books, you may have a photograph of our old house apiary, taken a great many years ago. In it is a picture of myself, Blue Eyes, and Caddy, and a glimpse of Ernest. We have also some pretty little colored pictures of birds, fruits, flowers, etc., suitable for framing. You can have your choice of any one of the above pictures or books for every letter that gives us some valuable piece of information.

"A chiel's amang ye takin' notes;
An' faith, he'll prent it."

THE last time, I told you how a bee talks and scolds *folks*; but how do you suppose they talk to each other? This is a question that big folks have tried to solve, and I don't think they really know to a certainty yet. But bees do talk among themselves somehow or other—perhaps not talk, exactly, but they make themselves understood. For instance, a bee has just found a great chunk of honey in the kitchen. After filling himself up full he goes home; and when he comes back he will bring a lot of others, and these others in turn will tell the rest of the bees, until by and by the whole colony, if there is honey enough, will become wild, and finally the whole apiary. Now, how do the bees tell each other that there is something awful nice over there in Jones's kitchen, and that they can get the ill-gotten sweets without the sweat of their little brows? I want you little folks to tell me how they manage to tell each other. Some of the big folks say that they cross their feelers (those kind o' horn-like things that stick out of the bee's head), and that, having done that, they seem to understand. Did you ever see a young bee come in the hive with his first load of pollen or honey? How he will wag his little body in the center of a circle of bees! He acts just as though he were tickled all over, like your little puppy dog when he wags his tail so hard as to shake his whole

self. Why do you suppose the bee should make such a fuss? The big bee-men tell us that the bee has just returned with his first load of honey, and that he wants every bee to know it. If I am not mistaken, old bees are guilty of such nonsense. Now, isn't it possible that the old bees, by this "wiggy-waggy" motion tell their mates that there is lots of honey over in Jones's kitchen? Perhaps I am mistaken; but suppose, if you have an observatory hive (if you do not have one you had better get one), you take one or two bees from said hive and put them into a glass-covered box where there is a little chunk of honey. Mary and Johnnie are to watch the bees, one on each side of the hive. In the mean time you are to carry the bees you have caught, some little distance away. When the bees have become pretty well filled with honey you are to dust a little flour over them and let them loose. They will, of course, go right back to their hive, where Johnnie and Mary are watching, and who are to watch these two dusted bees as they come in, and to note how they behave. In some way or other, probably by their peculiar actions, the two bees will induce others to go back with them. Then Johnnie and Mary are to watch them closely and see how they behave.

How many Johnnies and Marys are we to have report for the next JUVENILE GLEANINGS upon this point? It may be that it is too hard a task to perform; but if you succeed well I will send you a nice present of some kind. ERNEST.

A MOUSE DESTROYS THREE SWARMS.

My uncle put some of his bees in a house, and a mouse got in and killed three swarms and carried four quarts of seed corn into the hive. I intend, if I live, to help Uncle Henry with the bees, and hope to learn something more about them.

Hornby, N. Y.

GRACE HAVEN.

WHO WANTS SOME CACTUS-BLOSSOMS?

I walk 2½ miles to school, barefoot. Sometimes I get cactus-briers in my feet. The cactus has pretty blossoms—some red and some yellow. If anybody wants any, I will send some for cloth enough to make me or Rhoda (my baby-sister) a dress.

ZELLA H. WRIGHT, age 7.

New Helena, Custer Co., Neb., July 10, 1886.

HOW TO MAKE HONEY GINGER-SNAPS.

I live with my aunt and uncle, who keep bees. They have 71 colonies and 16 nuclei. We have taken off 3000 lbs. of honey, 300 lbs. to take off yet. We bake ginger-snaps with honey. We like it better than molasses. We use honey in making jams and in canning fruits. I will give the ginger-snap recipe: 2 cups of honey; 1 cup of sugar; 1 cup of butter or lard; 1 teaspoonful of soda; 1 teaspoonful of cloves; 1 teaspoonful of cinnamon; 1 teaspoonful of pepper; 1 teaspoonful of ginger. Boil all together five minutes; stir up thick with flour; roll thin, and bake.

I read about a solar extractor. We have one.

NETTIE BRECKBILL.

Kirkwood, Warren Co., Ill., July 20, 1886.

HOW TO HATCH CHICKENS.

I saw that you were having trouble in hatching your Brahma eggs. Did you keep the eggs moist enough? Mamma makes her nests by putting dirt

about three inches deep in the box, or by digging up a turf. Turn it over and scrape out a hole in the center, and turn it over in the box, and you have the place for the eggs. Now dampen this, and it stays several days, and holds the heat that is necessary to hatch the eggs. Our lettuce and cabbage grow so fast in the garden that mamma said she thought that even Mr. Root would be satisfied.

JESSIE S. SMYLLIE, age 10.

Caseyville, Lincoln Co., Miss.

HIVING A SWARM OF BEES.

We have 20 stands of bees. The first one came out May 12. We hived it, and on the next day it came out and flew off. We followed it, and it went about a mile. It went into a beech-tree. We cut the tree down, and got the bees in a box and brought them home. We put them in a hive, and gave them a frame of brood. They did well, and made about 25 lbs. of honey above, and on July 1st it cast a large swarm.

HARRY S. GREENFIELD, age 13.

Somerville, Butler Co., O., July 17, 1886.

Did you give the bees a frame of brood when they were first hived? Remember, it is the *unsealed* brood, not that which is capped over, which you are to give to swarms just hived. ERNEST.

CUTTING OUT CELLS TO PREVENT SECOND SWARMS.

Papa's 9 swarms of bees have increased to 20. He took off over 100 pounds of honey yesterday. He did not intend to let them swarm more than once apiece. One colony sent out a second swarm on the eighth day after the first came out. The other colony papa cut out the queen-cells on the seventh day after the swarm came out, and he found some of the queens out then; and in another he found three hatched on the seventh day; and he expected they would swarm again; but the next morning he found two of the queens dead in front of the hive. Besides these, three colonies have been left queenless by cutting out all the queen-cells but one, and that would die in the cells when full grown.

CLARA LINDSEY.

Hartford, Susq. Co., Pa., June 30, 1886.

The plan of cutting out all the queen-cells but one to prevent second swarms is quite generally practiced, and, as a rule, I believe the remaining cell hatches, though as in your case it sometimes fails to do so.

ERNEST.

WHAT SHALL BE DONE IN A CASE OF SEVERE STINGING?

In the fall of 1884, when my uncle was feeding his bees for winter, a heavy-laden bee which had "stolen the march" on my aunt by getting into the kitchen and taking a gorge of syrup was picked up off the floor by one of my baby-cousins, a boy one year old. The bee stung him on the fore-finger of his left hand. His finger, hand, and arm swelled alarmingly, nor did the swelling end there; for in about twenty minutes his whole body swelled and was covered with white spots. The mucous lining of his nose was so much swollen that he was compelled to breathe through his mouth. My aunt was not a little alarmed. Uncle picked him up in his arms, and carried him as fast as he could to a neighbor's house where they gave him plenty of whisky, and in half an hour the worst symptoms had disappeared. Uncle is a strong temperance

man, and does not want either the stinging or the cure repeated too often, and wishes to know if poultices of mashed onions applied to the arm-pits in case of severe bee-poisoning would not be as sure a remedy as alcohol taken internally.

WM. JOSEPH MILLER, age 14.

Hornings Mills, Ont., Can.

It would seem that the whisky saved the child's life, though it is possible he might have recovered without it. It is said to be an antidote for rattlesnake bites; and if the poison of the snake is similar to that of the sting, no doubt the whisky should be given, by all means, when the life of the patient is endangered. By no manner of means would I use the liquor under other circumstances. As regards the other remedies, I can not answer. Perhaps some physician who is thoroughly temperance in his views could give us light; but please bear in mind that we do not want remedies for ordinary stings where no danger is apprehended.

ERNEST.

HEADS OF GRAIN FROM DIFFERENT FIELDS.

A GOOD REPORT FOR CATNIP AS A HONEY-PLANT.

THIS plant, *Nepeta cataria*, is found extensively in the woods and waste places. Here, on the banks of the Ohio River, it has been spreading to an advantage for three or four years.

After the white-clover season was past, the bees worked strong on catnip, and continue to do so at present. Many of the unfinished sections, and also the spare room in the brood-chambers, have been filled with honey made from this plant. Even the nuclei send out their "honest workers" to gather a few drops of this abundant nectar, and they are building up. Thus, much of the trouble of feeding weak colonies is now saved, and there is less danger of their being robbed. The bees work on catnip from early morning until almost dark. Through the heat of the day they are found on it, especially if the catnip is in the more shaded parts of the pastures. When the hot days of late summer come on, the plants which are protected from the sun thrive better than the others. Probably if cultivated, catnip would yield considerably more than it now does. Yet, as it is, we are satisfied. As every one knows, catnip is not an injurious weed. One can hardly find a yard or garden without having a few plants. The honey made from catnip appears to be equal to that produced by white clover; and from the fact that catnip remains long in bloom, apiarists should at least save all the plants they may find around them, and give it a trial. In June, 1885, we ordered an Italian queen from you; she has proven to be of fine quality. ERNEST DANGLADE.

Vevay, Ind., July 28, 1886.

WHY DON'T THEY START QUEEN-CELLS?

I have a queenless colony, caused by destroying all the queen-cells but one (to prevent after-swarms), and that failed to hatch. I gave them a frame of eggs, but they have not started any queen-cells. Was it because they are waiting for the dead queen-cell to hatch? They have been queenless two or three weeks. Should I have destroyed the

dead queen-cell when I got them the frame of eggs? I know they are queenless, because they have no brood nor eggs in the combs. The combs are full of pollen and honey. If I give them a queen, will the bees clean the pollen out so the queen can lay?

Nokesville, Va., July 8, 1886.

W. T. ALLEN.

A colony of bees will, once in a while, fail to start queen-cells, when it is a little hard to decide why. In such cases we think it best to give them a reinforcement of young bees in the way of a frame of hatching brood. If this frame contains unsealed larvæ, they will very seldom fail to start queen-cells on it, unless they have something in the hive that they look to as a queen. Workers will always prepare a place in almost any comb fit for the queen to lay in, even if they have to remove both pollen and honey.

IS WAX EVER ADULTERATED WITH CORN MEAL?

On page 543, GLEANINGS for July 1, second column, in reply to D. J. Spencer, on the subject of brittle wax, you say some of your specimens seemed about like Indian meal. I think if you had put it to a test you would have found it was largely composed of Indian meal. Friend Lake had a similar lot, and he proved it was Indian meal, so you see there is cheating by even our vaunted bee-men. Is there no way such rascals can be ferreted out and brought to justice? In Lake's case he was unable to, having previously mixed the different lots together. Yellow Indian corn ground fine can readily be mixed with wax to a considerable extent without detection, so far as sight goes. Of course, it will render the wax brittle and destroy its ductility and tenacity—two very important qualities needed in comb-building. You are in for exposing scoundrels, so suppose you ferret out corn-meal scoundrels, and expose them.

C. GARWOOD.

Baltimore, Md., July 6, 1886.

The wax referred to was not adulterated with corn meal, for it could be melted, every bit of it, into a liquid. It would, however, assume the granular form again as soon as it commenced to cool.

HOW TO MAKE BEES WORK IN SECTIONS.

On p. 570, July GLEANINGS, Mr. J. M. Tucker asks: "How shall I make my bees work in the sections?" I will give my own views in reply to that question, my views not being theoretical, but based on actual experiments. Any attempt to "make bees work in sections" will prove a failure; for while they can, to a certain extent, be led, they can't be driven at all.

The advocates of reversing frames claim that, by so doing, they place the brood above the gathered honey, and the bees then carry it at once into sections. While this is true, it is far from being economical, as the honey must be handled several times in order to place it where it should have been stored originally. It is desirable, then, to do away with this extra labor, which can easily be done, and thus save our bees many steps, and the loss that is always occasioned by moving stores from one location to another. The key to the whole mystery is the spacing of frames. Let the combs in the brood-chamber be just $\frac{3}{4}$ inch thick, and spaced just a bee-space apart, then nothing will be sealed up below but brood, if ample room for stores is given in the sections above. All that Mr.

Tucker needs to do is to follow the above rule, and he will have no further trouble. J. E. POND, JR.
Foxboro, Mass., July 28, 1886.

NATIVE BEES OF FLORIDA NOT LAZY.

On page 534, July 1, Mr. C. Moorhouse writes: "The native bees are extremely lazy," and you index the article, "Bees of Florida Lazy." Last year was a bad year for honey, yet I had a natural swarm hived about the middle of March that had filled three stories (3) frames) by the first of June. No combs or foundation was given them. This year the same colony had the second story solid with sealed honey June first, and a crate of 27 sections nearly full. The sections were taken off June 27th, nicely sealed, as fine in quality of work as any man ever saw. They will average 1½ lbs. each.

Bees swarmed but little this year. My spring count was 11 strong, 4 weak, in Simplicity, and 2 strong in box hives; increased by natural swarming to 21; extracted during June, 53 gallons, and took off 208 1-lb. sections. This honey can not be excelled. It weighs 12 lbs. to the gallon, and is clear, and very light in color. No, Bro. Root, the little fellows are not lazy. Sometimes there is nothing for them to get, and again the mosquito-hawks are so thick they do not fly; and they fight the ants and the moth-worm, the chickens and the children, and I don't know what all. But I do know that they gather lots of honey. Yes, they do work, and so well that I have about concluded our little native is about as good as the Italian, and that they set a fine example to some people who come down here and talk about the laziness of the natives—too many of whom are like Bro. M.'s Northern queens.

Lavasota, Fla., July, 1886.

PHILIPPI.

WHAT TO DO WITH SURPLUS POLLEN.

Please state in next GLEANINGS what you do with combs in the spring that are from one-fourth to two-thirds full of pollen. Do you give them to the bees in brood or surplus chamber, or do you melt them up into wax? I put many such in the brood-chambers last spring, and I find it all there yet, so far as I can judge.

H. LARGE.

Whigville, O., July 29, 1886.

Friend L., we never have *surplus* pollen in our locality, for the bees use up all that remains in the combs in rearing brood, and you know brood-rearing is a large part of the business in our apiary. The matter is frequently discussed in our back volumes in regard to the disposal of pollen. I believe the most practical way is to steam the combs by hanging them in a covered wash-boiler until the pollen is so soft it may be thrown out with the extractor.

SMOKE WITHOUT SMOKE; GOOD, AT LEAST FOR NUCLEI.

Take an insect-powder gun (Lyon's I am using), fill half full with crystals of hydrate of chloral; press the bellows. The hydrate of chloral evaporates and saturates the air, and stupefies the bees. I find this more efficient than the English method of saturating the air with vapor of carbolic acid and oil of tar. This latter also can be used in the powder-gun by pouring ten drops of each into the bellows of the gun, saturating the air in the bellows.

Tampa, Fla., July, 1886.

J. M. PRICE.

Thanks, friend P., for your suggestion of hydrate of chloral; but is it not much more expensive than smoke? This is going to be

the important point. We can not afford any thing that costs very much.

RED-CLOVER QUEENS.

Why should any one make a flourish about "red-clover queens," and advertise them as something wonderful? Our Italians, Holy-Lands, and hybrids, work right along on red clover. I stepped into a 40-acre field one day, and it was full of clover, and covered with bees. There were plenty of black bees there, but I saw none of them on the clover; they were working on a little blue flower. Most of the clover has been cut, and the second crop is coming—also where the wheat was cut the clover now appears.

D. F. SAVAGE.

Casky, Ky., July 21, 1886.

Friend S., certain queens are called "red clover" because their progeny seem to have a way of gathering unusual quantities of honey during the red-clover bloom; that is, unusual compared with other colonies of similar strength.

OUR CARP-POND.

I should much like to have a report in next issue of GLEANINGS in regard to your carp-pond. I have seen nothing about it lately. Is it a success?

J. W. MARGRAVE.

Hiawatha, Brown Co., Kan., Aug. 2, 1886.

Friend M., it has not proved to be very much of a success as yet, for the reason that, with the multitude of my duties, I have not given it the attention it should have. For instance, although there are fish in the pond weighing several pounds, we have never tried one of them yet for food. Thirty or forty quite good-sized ones were found last winter on the surface, probably killed by the cold, because the pond was not deep enough. The reason it was not deeper is because muskrats persist in digging holes through the bank. The soil is also of such a nature between the pond and creek that the water slowly oozes out, and the pond gets very low unless we have very frequent rains.

HOW TO MAKE FOUNDATION.

Your article on page 513, "How to Make Foundation," is quite acceptable; and although we have always been very careful about keeping our mills free from every particle of wax, the way to do it best has been another thing; and the way to regulate the temperature of the dipping-tank is another. We have had very hard work to get sheets at all; the wax in the tank will get too cold around the outer edges or side of the tank before it is anywhere near cool enough in the center, and consequently the sheets all crack in the center of the boards, while they stick at the outer edges. Now, in this case we have set the tank on the stove and remelted the outer edges of it again, and it sometimes helps the dipping; but we have never been able to get sheets as thin as they ought to be for sections. Do we have to get the wax the right heat by heating and cooling it in this way? or ought the tank full of melted wax to cool all through alike by just setting it off and letting it set until ready to dip? There is something about the way we manage it that is not just right; and if you can give us some light on the subject it will help us wonderfully. Can we use these same boilers where we have a two-horse engine to furnish

steam with? We have had all we could make in this way; but our section fan. does not *quite* suit us.

ROLAND HOLMES.

Ft. Wayne, Ind., June 28, 1886.

Friend H., if I understand you your whole trouble seems to be that you do not set your tank of melted wax inside a tank containing water, to be kept at a proper temperature by means of a steam-pipe. A very small steam-pipe from any kind of a steam-boiler will enable you to keep the temperature of all your utensils just where you want it. During the past season we have made quite an improvement by keeping all of our wax sheets, when ready to roll, in a large oblong tin vessel of water. A steam-pipe goes into this water; and by opening or closing the valve we can keep the sheets just right, no matter whether the weather is cold or warm.

WEeping LINDEN FOR HONEY; PROLONGING THE BASSWOOD BLOOM.

I send you to-day by mail from Detroit some flowers of the *weeping linden* (*Tilia alba pendula*). I hope they may reach you in some kind of order, so that you may be able to scent the perfume, which is very delicate and powerful. The tree I have hangs over the sidewalk, and every one almost who passes stops to find where the perfume comes from. The American linden (basswood), blooms here about the middle of June; the English, or European linden, toward the last of June, and the weeping is now in full bloom. The white-leaved European also blooms in July, and the broad-leaved European (*Blatiphylla*) blooms in August. By planting all these varieties, the blossoming of the linden could be extended three months. Of course, some of them are scarce yet; but young trees, one or two years, could be imported cheaply from Europe. I imported both the English and the weeping from England some years ago.

JAMES DOUGALL.

Windsor, Ont., Canada, July 2, 1886.

TOBACCO COLUMN.

A FRIEND'S INFLUENCE, ALSO A KIND WORD.

THE goods arrived on the 26th of April, and in splendid order. I have put the chaff hive together. It is the first of your style I ever saw. I am highly pleased with all the goods.

I have a bee-keeping friend (a young man like myself), for whom part of the goods were, who has quit the use of tobacco. Can you send him a smoker? If he begins again, I'll see that you get your money. Thanks for extras in goods.

ALVIN L. HEINE.

Chandler, Ind., May 5, 1886.

I saw your offer in GLEANINGS, that any one who quit the use of tobacco you would send him a smoker. If you will send me one, I will never use it again; and if I do I will send you a dollar for the smoker.

O. H. MARTIN.

Lee, Allegan Co., Mich.

Will you please send me a smoker? I have quit the use of tobacco; and if I ever take it up again I will pay you for the smoker.

W. E. GRINDLE.

Bluehill, Me., June 28, 1886.

I have been a user of tobacco four years, and have quit its use. If I deserve a smoker, send one; and if I ever use tobacco again I will pay you for it.

Fremont, Mich.

WILLIAM GOULD.

Please send Henry Powell a smoker. He has agreed not to use tobacco in any way; and if he will he will pay you for his smoker. He asked me to write to you.

REESE POWELL.

Linden, Iowa Co., Wis., June 13, 1886.

I sold a colony of bees to a young man who has been using tobacco. He has quit, and now he wants a smoker; he promises to pay for it if he ever commences to use tobacco again.

F. A. DURRAND.

Esdaile, Pierce Co., Wis., May 29, 1886.

HAS COMMENCED THE USE OF TOBACCO, BUT PAYS UP LIKE A MAN.

I herewith send you 50 cts. to pay for a smoker that was presented to me for quitting the use of tobacco. I now have taken to the use of it again, on account of my health.

ANONYMOUS.

June 10, 1886.

I am very sorry, friend A., that you thought it necessary to use tobacco again. Are you *sure* that your health demanded it?

After using tobacco for seven years I have quit. If you think I deserve a smoker, I shall be very thankful; and if I ever use tobacco again I will pay you for the smoker. I am a reader of GLEANINGS, and I think it is second to none.

Fremont, Mich.

ROBERT ASHCRAFT.

A NEIGHBOR'S INFLUENCE, AGAIN.

I have a neighbor bee-keeper who has used tobacco for years, and has quit. I told him if he would quit and not use it any more, and promise you so, you would send him a smoker. He told me to send. Now, if he don't stay quit I will pay for the smoker, for I have to take care of his bees, and it is not convenient to carry his smoker; but I think he will stick.

JOHN BARLOW.

Sac City, Iowa.

THE DUTY OF A FATHER TOWARD HIS SONS.

The boys here use a great deal of tobacco. My two little ones were using it before I knew it. I have induced both to quit. The youngest is not at home. I did not see your offer, but I see the letters. If E. L. Goodbar is entitled to a "smoker," please send it; and if he ever begins again I will pay.

A. C. GOODBAR.

Lonoke, Lonoke Co., Ark., June 7, 1886.

THE USER OF TOBACCO AN UNCONSCIOUS SLAVE.

I wish to say to you and everybody that I have quit the use of tobacco since I commenced taking GLEANINGS. I have used the weed for 15 years, and little did I know what a slave I was to that poisonous weed till after I quit. Nor does any man, who is in constant use of tobacco, realize what a slave he is until he tries to quit. I find that saying and doing are two different things; and when a person says he is going to quit the use of tobacco, he wants to make up his mind that he has got to exercise some will power. If you think I am entitled to a smoker, send me one; and if I commence the use of tobacco again I will pay you for it.

A. B. HOLBROOK.

Point Peninsula, Jeff. Co., N. Y., June 3, 1886.

OUR HOMES.

I will be their God, and they shall be my people.
—JER. 31:33.

I AM invited to meet a body of bee-men to see the Chapman honey-plant in full bloom in York State; and as it is somewhere near father Cole's "Home on the Hillside" I propose to see the "New Agriculture" also, and so off I start this Monday morning, July 26. My first move is to call at the Town-Hall and be one of the first to cast a vote for the closing of the saloons in Medina. Thank God that I have at length that privilege, as one of his people, as in our text.* Then Maud takes me in the buggy to a station 12 miles away. Maud is getting to be a horse-woman, and handles Meg nicely, even if the *men-folks* have let her run away so many times we feared she was spoiled. Meg went up to a watering-trough; and before I knew it Maud hopped out and let down the check, instead of letting me do it. She explained that Meg would put back her ears and bite at me if I went near her, and so I stayed in the buggy. Meg even *goes* better when Maud has the lines, and I begin to suspect there is a sort of freemason understanding between them. Perhaps Meg means to say by actions, "I have had too many masters; that is why I ran away so many times. I like Maud, and she likes me (she gives me my clover and things), and I want her to handle me." All right! I am quite willing, if you only make the train between you.

We pass through a small town; the store-keepers, grocers, etc., are sitting out on the walk in easy-chairs, waiting for customers. They might be doing worse; but ought any of God's people, in these days of such great possibilities, to be sitting and waiting for *any thing*? Why can't they jump up and push something! Farmers along the road, many of them, seem content to raise the same crops (no better) that they have done year after year. Why, I couldn't live if I were not pushing on to something new, as each season comes around. In regard to waiting for customers—how can great strong men sit and wait? I would a hundred times rather follow a plow or a cultivator than to sit before a store waiting for some one to come to be waited on.

Out of town we find great fields of tobacco. While I admire the soil, and the wonderful vegetable growth these plants are making with their broad green leaves as high as the fence, I can not see how any who call themselves God's people can give their best land, and their *very best manure* in raising a narcotic with which to poison their fellow-men. I know it sometimes brings money; but is *getting money* ever to come before *doing right*?

Maud remarks, that the tobacco-raisers never seem to have nice houses and barns, even if the business is profitable.

I bid good-by to Maud (and Meg) just ten

minutes before train time, so Meg has held her reputation. It costs \$1.25 per day extra to ride in a drawing-room car; but if I don't ride in such car I could not have the nice little table on which I am now writing to you. The roads are full of muddy water, and it is running down in muddy streams, all through Ohio and Pennsylvania, although I have not seen a drop of rain fall. Innumerable gardens flit by us, but nothing in any of them is ahead of our own at Medina, unless it is rutabaga turnips in Pennsylvania. Next year I will try raising some so early they may be a yard across in July. Buckwheat is looking finely with the recent rains. Some of it is already in bloom, but not a tobacco-plant is to be seen in the whole country.

Olean, N. Y., is an astonishment and a wonder. Huge oil-tanks, big enough to contain large buildings, cover the summits and sides of the hills, and dot the valley by the hundreds, and may be thousands. Surely this must contain oil enough to light the world; in fact, Olean takes its name from *oleum*, meaning oil.

This oil is one of God's latest and brightest gifts to light up "Our Homes" so beautifully and at so little expense. Does this also mean, "I will be their God and they shall be my people"?

Now the train clatters along part way up the range of hills, and a beautiful valley is spread out before us. Villages, with their clean white churches; shops and stores, and many pretty houses, with well-kept gardens, say again the thought expressed in our little text.

It has been raining, and so the white clothes are, many of them, still on the line, telling of patient, hard-working mothers, and of many little ones to be cared for. God grant the thought in all these homes may be, "They shall be my people."

I am much impressed with the looks of the country and people in the vicinity of Chautauqua; an atmosphere seems to pervade the whole country round about; *i. e.* "I will be their God, and they shall be my people." Is this the effect of the Sabbath-school gatherings there? The fields are covered with beautiful grain and garden-stuff of all kinds.

The sight of Wellsville, Allegany Co., N. Y., with its beautiful residences and thriving business places, reminds me again of our text; and when I go into the house to sit down at the "Home on the Hillside" (after having explored said *hillside* pretty well) I discover a clean bright fire burning in the grate. As the air is a little bit chilly after the rain, and my feet are somewhat damp from my explorations over the soft soil along the hillside, the warmth seems quite comfortable; and then I discover that it is from natural gas.

"Why, dear friends, is it possible that this is natural gas, and nothing more?" And then I inquired, "And does it really give sufficient heat for the most severe winter temperatures?"

In answer to the question, the good lady of the house simply touches a lever with her foot, near the fireplace, and in a second every thing round about the grate is full of

*On my return I learned that our people cast 355 votes for no saloons, and only 26 for saloons. My friends, have you done as well as that in your county-seat?

flame, and the heat pours forth in such a volume that I feel abundantly satisfied it is equal to zero weather. When the fire-bricks back of the grate began to look as if they would soon be red hot, another touch of the lever with the foot and the fire is as gentle in a second as a lamb.

Of course, I was up in the morning before anybody else (as usual), and the roaring of the fire, soon after, in the kitchen stove aroused my curiosity. Yes, they were getting breakfast with natural gas, in the same way; and when the breakfast was cooked, down went the heat instantly; no wood or coal to be lugged in; no ashes to be carried out, no smoke or litter. The stove looked as clean and innocent as if it were standing in a hardware store, nicely blacked up so as to show off to passers-by. This great and wonderful gift has all this while been slumbering in the bowels of old Mother Earth, waiting for the intelligence of man to let it out and do his bidding. Gas-pipes run along the streets of Wellsville, on top of the ground. There is no need of burying them, as the *gas* does not freeze up. "I will be their God, and they shall be my people," came into my mind again, and I wondered if the people in Wellsville and other towns in New York remembered to be thankful for this great blessing. I suppose they think of it after a while just about as we think of the blessings we enjoy in our own homes the world over.

It is July 27th, in the afternoon, and I am waiting for the train at a country store. They said there was not any place to get supper at the station; but I almost always find suppers, and good ones too, and I did this time. One of the young men who clerked at the store invited me to go home with him to supper, if I would put up with what happened to be on hand. We had a very nice supper, including raspberries and cream, and ice-cream for dessert, even in an out-of-the-way country place. The grounds about *this* home were beautiful and tasty, and every thing bore evidence of culture and intelligence inside. I do not know that these people loved God, but I think they do, for many things seemed to say, "And they shall be my people."

Pretty soon a pair of horses drew up to the country store, attached to a somewhat odd-looking wagon. The wagon was sent by friend Chapman to get the bee-men who were to be at his convention the next day. Friend Chapman has a market-garden, so the storekeeper told me, and this was one of his *market-wagons*. Although he is not so much of a market-gardener as he used to be, he has, in years past, made lots of money in the business. I felt glad I had come.

The town of Versailles, Cattaraugus Co., N. Y. is a very pleasant and romantic spot. A great river pours over the rocks, and lulls us to sleep with its roaring. A large flouring-mill, right in the center of business, and many things about the town, reminded me of the village where I lived when a boy. In the evening, boys and girls collected about the postoffice to get the latest news. As a matter of course, the girls were dressed in warm-weather costumes, and some of them

were very pretty; and as I listened to their laughing and chatting, I wondered if they, too, were Christians, and if they all went to a young people's prayer-meeting somewhere, every Sunday evening, or may be oftener. Do they ever think of the text I have been thinking of during all this trip? Were they, all of them, even the gayest among them, God's people?

Next morning, with Prof. McLain, our friend L. C. Root, W. T. Falconer, of Jamestown, N. Y., and some others whose names I have forgotten, it was my pleasure to go out among the honey-plants, even before the bees had commenced working. Friend Chapman is a genius, and, like many other geniuses is somewhat eccentric. He has about 175 hives of bees; and although he is progressive enough to have planted fully two acres of the Chapman honey-plant (with enough more that will have blossomed next year to make ten acres) he does not use a movable-comb hive—says he does not want any. Shall I tell you how he markets his honey? Well, he markets it a good deal the way he does garden-stuff. He has it stored in large boxes. He puts these boxes into his wagon, and drives to some town when there are many people on the streets. Then he cuts out his honey in chunks, puts 10 lbs. in one of a lot of cheap tin pans bought for the purpose, and tells the passers-by, "Here, you can have ten pounds of this beautiful nice honey, tin pan and all, for an even dollar." The price is so low, and friend Chapman is such an old hand at the business, that he sells out his whole load in a couple of hours, and goes home with his pocket full of dollars. It is cutting down prices, I know; but it is his way of doing. Well, I was a little incredulous about finding that 175 colonies could gather honey enough from two acres from *any* plant so the bees would store honey in sections. By the way, friend Chapman now uses one-pound sections in place of the large boxes he formerly used; but his hives are still box hives; that is, the brood-apartment is. The honey-plants stand in long rows, and are cultivated like other market-garden stuff the first year. When they first begin to bloom, but little attention is given them. The plant is so hardy that he says the drought killed all the weeds, but did not hurt the plant, and I guess he is right about it. They were growing finely on hard hillside gravel. Friend Chapman has, however, some beautiful land for market gardening, and I think he had the finest patch of cantaloupe muskmelons I ever saw in my life. Although there were several thousand hills, each hill was planted under a box perhaps a foot square and six inches high. Over this box a pane of glass is laid. Melons used to be one of his great specialties, before they brought in so many from the South; but he still makes considerable money from them yet.

At one side of the house, and near the street, I noticed, under a grove of maples, some queer-looking tables painted white. One table was square, with an opening inside, where a workman could stand; the other table was round, with a similar opening. Both tables were surrounded with

beautiful maple-trees, evidently planted expressly for the benefit of the tables, for those around the square table were planted at regular distances, in the form of a square; those at the round table in the same way, only they were in the form of a circle. Some of these trees were eight or ten inches in diameter. Friend Chapman remarked, in answer to the question, that these tables were for washing and packing garden-stuff. They did excellent service on this 28th day of July, for our bee-convention. Seats and chairs were arranged for the company. Sections of honey, gathered from the Chapman honey-plant, were on the tables—enough for all. An organ placed on the porch, a little on one side, was well supported by singers of no mean talent; and between the speeches we had good music. The audience was mostly composed of the people from the country round about—friends of Mr. Chapman, and anybody who cared to come, who had heard of his famous honey-plant. Prof. McLain spoke first, and gave us many facts that were new and valuable. He is employed by the U. S. government, as you may know, to investigate and develop whatever is worthy pertaining to bee culture. Our friend L. C. Root also gave us one of his happiest talks, and I felt sorry all through it that we could not have had a shorthand writer to give it in full to our nation of bee-keepers. Your humble servant spoke briefly between the two. He tried to tell the people of God's various gifts to mankind; of the honey to be had for the gathering; of the fruits of the soil, and, later, of the oil and gas, of which I have spoken before, and finally of the new honey-plants that bear honey of such quality and quantity that it will pay to raise them for the honey alone. I spoke of the way in which God seems to call us to exercise our talents and abilities in different fields, and of the peculiar way in which these calls sometimes come. Friend Chapman, with his oddities, feels called upon by some invisible power to use his rare skill in market gardening, toward introducing and disseminating this wonderful new honey-plant. Prof. McLain had told us that its name is *Echinops sphaerocephalus*, signifying "round-headed hedgehog," and that the place of its nativity was in the south of France. How should it come here? Even friend Chapman could not tell us, further than that he presumed it was among some specimens he had collected while on a visit to Florida or the Bermuda Islands. While traveling it had been his habit to save specimens of plants. Well, after these dried-up specimens had lain a long time in an old sack in the garret, or some such place, Mrs. Chapman suggested, like a good housewife, that it might as well be thrown away or burned up. Accordingly the sack was turned inside out, and shaken on one corner of the garden. Finally this queer plant came up, and friend Chapman noticed how eager the bees were to visit it. Mr. Hubbard, a neighbor of his, who has been assisting him in his experiments with his honey-plant, told us, in a brief little speech, that he just counted, for an experiment, the bees that

visited a single ball of the Chapman honey-plant during just one day. How many bees do you suppose came to this one blossom, or ball of blossoms? Well, it was 2135. Of course, an assistant watched the blossom while he got his dinner and supper. To further test the quantity of honey secreted, some paper bags had been tied over the blossoms, two days before the convention. These papers were taken off, and the balls seemed as if they had been dipped in honey—good thick honey too. Since coming home I have tried the same experiment. The honey, as it first oozes from the nectaries, is first thin, like sweetened water; but during 48 hours of our hot July and August days it becomes as thick as honey in the comb. The flavor is a very pure sweet—much like simple syrup, only it has a slight flavor, which we all pronounce very pleasant. I think it will rank equal to white clover or linden. In closing my talk I spoke of all these valuable qualities belonging to this plant, and repeated my text in connection with the thought of God's promises and purposes to us his children. As friend Chapman has expended a good deal of money experimenting with this plant, he prefers to control the sale of the seed—at least for several years. This year it will be offered in packages of half an ounce each for \$1.00. No smaller quantity is to be sold. Below we give a cut of it.



CHAPMAN HONEY-PLANT.

In regard to the above plant I submit the following letter from friend Cook:

Dear Mr. Editor:—You will remember that Mr. Chapman, of Versailles, N. Y., exhibited at the Detroit meeting a honey-plant which he said commenced to bloom just at the close of the basswood season, and was of rare excellence as a honey-plant, both as regards quantity and quality of honey which is furnished. Upon examination I found this to be *Echinops sphaerocephalus* of Central France. I am indebted to Dr. W. J. Beal for the determination. Through the kindness of Mr. Chapman I secured a number of the plants in the spring. These were set

out the last of April; and though the season has been terribly dry they have grown on light sand most vigorously; are magnificent plants, and are loaded with globe-like flower-heads. The plant looks some like a thistle, as we might expect, as it is a composite plant. The flowers opened July 20, and each ball has a great many flowers, each of which must be visited many times a day by the bees; indeed, the flowers are alive with bees from early morn till late in the evening. Surely this thing of beauty is a joy in a double sense. A. J. COOK.

Agricultural College, Mich., July 23, 1886.

The name is from the Greek, *echinops* signifying hedgehog, and the plant is almost exactly like a big thrifty thistle, only it bears round balls, as seen in the engraving. The latter part of the name means "round-headed." Now, if this plant furnished honey right along, day after day, for as many months as the figwort does, it would probably, be ahead of any plant known on the face of the earth. The spider-plant furnishes a larger quantity of nectar, but it is secreted only in the night, and gives us nothing in the daytime. It is also so thin and watery that the amount of saccharine matter is probably not as great as in the Chapman plant. The Chapman plant yields honey about 20 days; but by mowing off the tops it can easily be made 20 days later; it is also much hardier than the spider plant, and would probably grow on poor soil where even the figwort would not amount to much. There have been more bees at work on our patch of figwort for the last 60 days than I ever saw anywhere on the Chapman honey-plant; but the honey is not nearly so thick as that from the latter. It may be a nice point to determine which plant would be most profitable. The Chapman plant will continue to blossom and yield honey for three years, after it is once started. Dr. C. C. Miller, who has experimented considerably, can probably aid us right here; and in any case we can thank God for this new revelation in regard to the possibilities of cultivating plants for honey alone. Of course, friend Chapman's bees were not *all* at work in sections; but colonies having young queens just commencing to lay were storing at a pretty fair rate, and the sections of honey placed on the table for examination were taken from one of these colonies.

The social element at friend Chapman's model bee-keepers' convention was a decided success; and I echoed the thought of our friend L. C. Root, that it would be an excellent thing if we could have more just such informal open-air meetings of bee-keepers. "By this shall ye be known of all men, that ye have love one to another." And how better can we demonstrate to the great Father above that we are trying to look up in the spirit of our text to-day than by showing our good will to each other? "I will be their God, and they shall be my people."

The Iowa State Bee-keepers' Association will meet on the Fair-grounds in Des Moines, on Tuesday, Sept. 7, 1886, at 2 P.M., continuing in session during that and the following two or three days. A large and substantial tent has been secured, and is now at hand, for the use of the society. Any or all of the 6000 bee-keepers of our State are urgently requested to be present and help make the meeting a pleasant and profitable one, and a hearty invitation is extended to all visiting brothers from other States. O. O. POPPLETON, Pres.

A. J. NORRIS, Secretary.

GLEANINGS IN BEE CULTURE.

Published Semi-Monthly.

A. I. ROOT,

EDITOR AND PUBLISHER,
MEDINA, O.

TERMS: \$1.00 PER YEAR, POSTPAID.

For Clubbing Rates, See First Page of Reading Matter.

MEDINA, AUG. 15, 1886.

No good thing will God withhold from them that walk up rightly.—Ps. 81: 11.

USING FULL SHEETS OF THIN FOUNDATION FOR SECTIONS.

D. A. JONES says, in the C. B. J. for July 28:

Those who have not used full sheets of section foundation in their sections, should try it and observe the difference in quantity of honey secured. Our experiments have fully convinced us that sections should contain full sheets; and with the beautiful light section foundation we are now making there is no danger of any backbone in the comb honey.

In *Serilmer's Magazine* for Nov., 1875, is an interesting article on long life, and from it we quote the following lines:

Democritus, Pythagoras, and Pliny, trace their length of days to the use of oil without and honey within. Two persons in modern times are mentioned as having lived to the ages of 108 and 116, who, during the last half-century of their lives, for their breakfast took only a little tea sweetened with honey.

REDUCTION IN THE PRICE OF EXTRACTED HONEY.

For the first time in our recollection, we are able to furnish a nice article of extracted honey for 8½ cts. per lb., package included, providing a 58-lb. package be taken at one time; and for two such packages we can make the price only eight cents. We make this discount on two, because two of our square honey-cans ship so nicely in one case. For 10 cases, 23 cans in all (1160 lbs.), we will make the price at only 7½ cts. per lb. This is for the best quality of "Western Reserve" clover honey. For basswood honey, equally good in every respect, the only difference being in flavor, the price will be ¼ cent less. Now, then, if honey can not be used at this price, in localities where it is scarce, I shall be much mistaken.

ANOTHER SERIES OF THE WATERBURY WATCHES.

THE first gross of series E is now on our hands. While the watches are better made than any heretofore, there has been a reduction in price, so that we can furnish single watches by mail, registered and postpaid, at \$2.75; two watches as above, at an even \$5.00; five or more watches by express, for \$2.20 each. If ordered by mail, in lots of five, add 45 cents for postage and registry; or we will send a watch postpaid, and GLEANINGS one year, for \$3.00; or a watch will be sent free as a premium for 5 subscribers. Of course, Waterbury watches are liable to fail, like all other pocket timepieces; and it would be natural to suppose that, if they are furnished at such extremely low figures, they could hardly be expected to do as well as watches costing \$10.00 or more. We think, however, that the cost of keeping them in repair is, as a rule, much less than with any other pocket timepiece at any price.

THE OLD AMERICAN ZINC, AGAIN.

ALTHOUGH the great majority have reported favorably to the perforated zinc of our manufacture, some few have claimed that the queens pass-

ed through, and that they preferred the old *American zinc*, made in Chicago, which has the rounded-end holes. For the accommodation of all such, and those who wish to experiment with it, we have purchased a lot of 1000 ft. of this zinc, in sheets 28 x 96 inches, which we can sell @ 12 cts. per ft.; \$2.00 per sheet (18½ ft.); 5% off for 2 or more sheets; 10% off for 10 or more.

HUMBUGS AND SWINDLES, AND THE "GOLDEN" BEE-HIVE.

On page 480, in our issue for June 15, we published a communication from H. W. Carman, reflecting somewhat on one A. J. Carman. We are informed that both of the gentlemen mentioned there, Hardaway and Carman, are good reliable men. We are glad to know this; but it is not at all surprising that good and reliable men have been drawn into investing in a patent-right bee-hive. Many of our older readers will remember that N. C. Mitchell's strong plan of operations used to be to induce a minister of the gospel, or some professional man, into becoming one of his agents, and then he would straightway get out his advertisements, bolstering up his bad name by having some good man's name coupled with it.

Moral.—Be careful how you let your good name suffer by being linked with any thing disreputable.

THOMAS HORN.

Mr. HORN has been filling orders, to some extent at least, since our last issue, for we have had reports from three or four, to the effect that they had received their bees or queens. A still larger number, however, complain that he has done nothing, and does not answer letters. In one case, where he wrote positively that the bees had been shipped, the express agent at his place declares that no such shipment was made at all. He also fails to meet his promises in regard to the payment of money. When we received Mr. Horn's advertisement we had what we considered satisfactory reference and evidence that he was a straight man; but as soon as we had reason to think he was not acting in an honorable way we refused to continue his advertisement, and promptly gave the public notice. Perhaps we may gain a moral from the whole matter something like this: Do not be in a hurry to send very much money to those who start up suddenly, and promise great things in their advertisements, such as prepaying express charges, etc. Better pay a little more, and deal with those who are old and well established in business.

GOODS NEAR YOUR HOME, AT A REDUCTION FROM REGULAR PRICE.

We have the following lot of goods at the places named, for which we want customers. Now, it is altogether likely that there is some one located not very far from where these goods are who will be needing just such articles, especially if he can get them a little lower than the regular price, and doesn't have to pay much freight charges on them. In hopes that there are such persons, we append a list of the articles for sale, giving the present value of the goods and the amount we will take for each lot entire. We give a number to each lot, and the name of the place where they are being held, subject to our order. Remember, they are all perfect goods, just as fresh and new as if shipped from here. Remember, also, that at the price we offer them we can not break lots; each lot must go

entire. In making your orders, please give the number of the lot as well as the articles contained in it, and thus help us to avoid mistakes.

- | | | |
|---------|---|----------|
| No. 1. | Arlington, Iowa.
Ten 2-story portico hives, complete, in flat, for comb honey, including m. c. frames, wide frames, sections, separators, thin fdn. for sec., 7 lbs. brood fdn., and enamel sheets. The lot foots up to \$25.30. We will sell it complete for..... | \$22.00 |
| No. 2. | Union City, Ind.
13 combined shipping and honey crates flat; 90 tin separators for above crates; 26 pieces glass for above crates; 40 metal-cornered brood-frames in flat. Present value, \$1.50; will sell for..... | 4.00 |
| No. 3. | Clay City, Ill.
3000 sections, one piece, V groove, 4¼ x 4¼ x 2 in. wide. Present value, \$12.00; will sell for..... | 10.50 |
| No. 4. | St. Joseph, Mo.
10 Simp. hives, made to take crosswise Simp. frames, of No. 1 stock boards, in flat, no inside furniture. Present price, \$6.16; will sell for..... | 5.00 |
| No. 5. | St. Paul, Mo.
28 48-lb. shipping and retailing cases, in flat, without glass. Worth \$5.04; will sell at..... | 4.80 |
| No. 6. | Lock's Mills, Maine.
One roll pony-netting, 4 ft. wide, 1' 0 in. long; 2 in. mesh; No. 19 wire. Regularly sold for \$6.00; will take \$5.80 for it. | |
| No. 7. | Nassau, N. Y.
500 wide frames, for 8-lb. sections, in flat. Worth \$4.00; will sell for..... | 3.75 |
| No. 8. | Riverside, N. J.
750 1-lb. 7-to-foot sections. Worth \$3.00; will sell for .. | 2.75 |
| No. 9. | North Walton, N. Y.
100 metal-cornered frames, in flat. Present value, \$2.50; will sell for..... | 2.50 |
| No. 10. | Poughkeepsie, N. Y.
100 1-lb. honey-lumpers. Present value, \$3.00; will sell for..... | 2.75 |
| No. 11. | East Otto, N. Y.
1000 1-lb. 1-piece 7-to-foot sections. Value, \$4.00; will sell for..... | 3.75 |
| No. 12. | Caribou, Maine.
900 sections, 4¼ x 5 x 1 7 16 wide, open on all four sides. Present value, \$4.50; will sell for..... | 3.50 |
| No. 13. | Canal Fulton, Ohio.
Eight chaff hives, complete, for comb honey, in the flat. Present value, \$24.00; will sell for..... | 22.00 |
| No. 14. | Delaware, Ohio.
35 bottom-boards for Simp. hives; 210 tin separators for combined crates. Present value, \$8.75; will sell for..... | 7.50 |
| No. 15. | Foster Brook, Pa.
100 wired m. c. brood-frames, in flat, including wire and tin bars. Present value, \$3.00; will sell for..... | 2.75 |
| No. 16. | Johnson City, Tenn.
One No. 7 honey-extractor, with basket, only 15 in. deep. Present price, \$8.00; will sell for..... | 6.00 |
| No. 17. | Cairo, W. Va.
One 2 story Simp. hive, rigged complete for comb honey, and 5 lbs. fdn., ½ thin, for sections, and ½ for L. frames. Present value, \$5.25; will sell for..... | 4.75 |
| No. 18. | Elmira, N. Y.
One 2-H. P. engine and boiler complete. This has been used some, but has been put in as good shape as when new. Price of a new one, \$175.00; will sell this for..... | \$150.00 |

OUR OWN APIARY.

FOUL BROOD AGAIN, AND HOW WE ARE HOLDING IT IN CHECK.

FROM various letters that we have received, and from further experience with the disease, we feel pretty well convinced that we have been fighting the real foul brood, so called. Our friend Milton Hewitt, of Perryopolis, Pa., however, who had some sad experience with a different phase of diseased brood (page 699, 1885), is of the opinion that our colonies are infected with the same disease which attacked his bees. Speaking of the characteristics as observed in this type of affected brood he says:

1. "That the disease is not contagious by contact, or by introduction of bees, honey, comb, brood, etc.
2. "That the infection is transmitted by the fertilization of the queen by a drone from a diseased hive."

He further states, that the removal of said queen, and the introduction of new blood, cures the affected colony.

In regard to this I will say, were this form of the diseased brood present in our own apiary we should expect about one-fourth of our brood-combs fit subjects for the furnace. Whenever we have introduced queens from foul-broody hives into other colonies we have yet discovered no instance where they transmitted the disease. On the contrary, as we should expect with foul brood, the larvæ of said queens are not as yet affected; but we have found, and that to our sorrow, that *honey* from diseased colonies gives the disease. It is a well-known fact, that bees from neighboring colonies intermingle to some extent, and that, in consequence, some little honey would be exchanged. Now, wherever we have found one diseased colony in our apiary we have invariably found four or five other diseased colonies neighboring and adjacent to this one, showing that the disease was transmitted by the honey, and proving the old statement that foul brood is a disease of the honey.

Since our last report, several more cases of foul brood have appeared in our apiary, and the number of diseased combs now cremated in the boiler-furnace is 126. Whenever traces of the disease have developed, the colonies so affected have been treated as described upon pages 610 and 630, just as soon as discovered; no matter whether the colony was so badly diseased as to emit the foul-brood odor at the entrance, or so little affected as to reveal only an occasional diseased cell, the manner of cure was the same.

Some have made an outcry against the seemingly needless and wanton destruction of so many combs. I shall have to reiterate that new frames of foundation are not only cheap but safe; that, while we do not decry the use of salicylic acid as a disinfectant of foul brood, or the trying-out of the affected combs, we do know that the absolute cremation and destruction of combs affected by foul brood is sure to prevent the further spread of the disease from said combs. Furthermore we can not afford to run any risks by experimenting upon the more lenient measures recommended for cure, when so many colonies are at stake.

I am glad to say, that, when the apiary was last gone over, no trace of the disease appeared. If it shall not again break out, then we shall feel that we have employed the cheapest way of fighting the disease, and that there is nothing like "nipping it in the bud." But, hold! a prominent bee-keeper and apicultural writer has just written us, expressing his regrets that the dreaded foul brood has at last visited us. He says, "I am very, very sorry to hear that you have foul brood in your apiary, knowing as I do what a terrible thing it is." In spite of all the skill he could bring to bear he has had fully 75 cases during this and the previous season, and, as a matter of course, he has had to discontinue the sale of bees, as we have done. Surely, there are not many crumbs of comfort in this for us. If, however, we shall cure the further ravages of foul brood, and thereby be enabled to instruct our fellow bee-keepers how to detect the presence of the disease, and how to cure it without the usual sacrifice, we shall feel ourselves amply repaid; and instead of a misfortune, a visitation of the all-seeing Providence.

SHALL WE PURCHASE SUGAR OR CHEAP HONEY TO FEED OUR BEES THIS FALL?

This is a question that has been asked many times; and many, no doubt, since this matter of foul brood has come up, have decided in favor of

the sugar. As already stated, we feel pretty certain that the disease originated in our apiary from honey that we purchased. We can assign no other reasonable cause. I was talking with a bee-man who made us a visit the other day, and who said that he had intended this fall to buy cheap honey and feed it to his bees; but that, since we had come out so frankly, stating the probable cause, he had decided to feed sugar. No, sir; we may talk about feeding bees their own "pure sweets," the folly of purchasing sugar at the expense of the honey-trade, and all that sort of thing; but if we purchase cheap honey of a doubtful or unknown source, we are running a risk. It is true, we may boil all such honey to kill any possible germs of the latent disease; but that would be attended with some little expense. Of course, if you have honey of your own raising that you know is good, that is another matter; but if you purchase honey to sell again, store it away where the bees can by no possible means get a taste of it.

SENDING FOUL BROOD BY MAIL FOR PURPOSES OF EXAMINATION.

At different times we have had samples of affected brood sent us for our examination, accompanied by a letter of inquiry as to whether the sample was a real case of foul brood. While in our individual case we do not fear any infection to our bees (as immediately after examination we always "hist" it into the boiler-furnace), yet, in the minds of all carefully disposed bee-keepers, we think the practice in general would be condemned. Some one less careful, and not knowing the real danger, might do our fraternity a vast deal of harm. This would apply to the one sending the specimen, as well. If I am correct, Prof. Cook, in his books, has cautioned his readers against sending such samples by mail. If any of you have a great curiosity to see and smell foul brood, you had better be content with what you can gain from the pens of others less fortunate, or you will think it is a real case where "ignorance is bliss 'tis folly to be wise."

ERNEST.

FARM OF 57 ACRES, AND APIARY OF OVER 100 COLONIES OF BEES FOR SALE.

15tfdb

GEO. A. WRIGHT, GLENWOOD, SUSQ. CO., PA.

FOR SALE.

One Barnes combined circular and scroll saw, size of table, 26x36, including 13 circular saws from 3 to 8 inch; 11 scroll saws; 2 mandrels; one 6 in. emery wheel; 1 cutter-head; 1 saw-set; all in good running order, except some of the saws may want filing. Will sell the above machine with all the attachments for \$35.00 cash, delivered on cars, which is about half price.

Address

S. H. WINCHESTER,
Elmore, Peoria Co., Ill.

16d

PREPARE FOR WINTER.

We have unequaled facilities for manufacturing the Root chaff live at a great reduction from ruling prices. Mr. Zeno Doty, Grafton, Neb., writes July 9th, "Your material, make, and price is far better than I can get anywhere else. Send for price list and special prices for this fall."

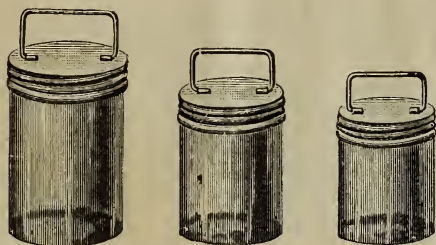
A. F. STAUFFER & CO., Sterling, Ills.

For Sale. COLONIES, NUCLEI, and QUEENS,
AT LOWEST PRICES.

11-16db

GEO. D. RAUDENBUSH, READING, PA.

DADANT'S FOUNDATION FACTORY, WHOLESALE AND
RETAIL. See advertisement in another column.



GLASS

HONEY-PAIS CHEAPER THAN EVER.

In retailing honey, as in selling almost every thing else, there is nothing that pleases customers more, or secures quicker sales, than a good article put up in neat and tasty packages. For extracted honey, in small quantities for a "lunch" or "picnic" it seems to me nothing is more handy, or will "take" better than these glass pails. They are made of flint glass, as clear as crystal, so that the customer can readily see just what color the honey is which he is getting. The top screws on securely; and, better than all, it has a handle to carry it by so that you may always have it right side up. Moreover, the manner of attaching this wire handle to the tin cover has been improved by soldering on the tin clip holding the handle, instead of cutting a hole in the cover and bending over the points on the inside. By buying a very large quantity of these pails direct from the manufacturers we are able to offer them to you, in lots of 100 or over, cheaper than we have been able to get them from wholesale glassware men in lots of 1000. Here are our reduced prices, free on board cars at Medina:

	Each	10 rates	100 rates	1000 rates.
1/2 lb.	5 cts.	40 cts.	\$3.50	\$32.50
1 "	5 "	45 "	4 00	37.50
1 1/2 "	6 "	55 "	5.00	47.50

These pails are packed 100 in a barrel; and at these close prices we can not give 100 rates on less than 100 of one size, as it would necessitate repacking.

A. I. ROOT, Medina, Ohio.

DADANT'S FOUNDATION FACTORY, WHOLESALE AND RETAIL. See advertisement in another column. 3btfdb

ATTENTION, BEE-KEEPERS!

Now is the time to Italianize cheap. Having all my orders filled to-date, I will sell fine queens, from my well known strains, at the following very low rates.

1 queen, - - -	\$.80	1 tested queen, - - -	\$1.50
6 " - - -	4.50	6 " - - -	8.00
12 " - - -	8.00	1 select tested queen, - - -	2.00

Safe arrival of all queens guaranteed, and queens sent by return mail. Address

16tfdb WM. W. CARY, COLERAINE, MASS.

2 H. P. ENGINE FOR SALE.

We have at the factory in Elmira, N. Y., a 2 H. P. engine and boiler that has been rigged up exactly as good as new in every respect. It ought to bring full price of a new one, but in order to get it off our hands we offer it for \$150.00.

A. I. ROOT, Medina, O.

VERY LOW.

I have a number of selected tested queens which I will sell for one dollar each. These will be fine queens to breed from, all reared this season, and guaranteed to satisfy all. I will also dispose of a few full colonies of pure Italian bees in Sept. and Oct., in new L. hives, at \$7.00 each.

16-17d S. F. REED, North Dorchester, N. H.

THE AMERICAN APICULTURIST

Sent one year, and a tested Italian queen, to each subscriber; all for \$1.50. Sample copies free.

15tfdb Address HENRY ALLEY, Wenham, Mass.

OHIO WESLEYAN UNIVERSITY

DELAWARE, OHIO. One of the great Colleges of this country, offers to both sexes, at surprisingly small expense, unsurpassed advantages for a full College Course or for Special Studies. Collegiate, Preparatory, Normal, Commercial and Art Departments. **First-class Conservatory of Music.** Elegant home for ladies with teachers. **Necessary expense for a term, only \$50 or less.** Catalogue free. C. H. PAYNE, LL. D., President.

HARRINGTON'S AD. BEES CHEAP!

I have the finest lot of Queens and Bees I have ever raised in my 13 years' experience, and should like to have everybody see them. I will sell at following low prices:

SELECT TESTED (VERY FINE)	\$2.00
TESTED - - - - -	1.00

My Queens are nearly all mated with drones from an imported Italian Queen. Half-blood Holy-Lands, Cyprians, and Albino, at same price.

H. B. HARRINGTON,

May 26, 1886.

Medina, O.

MUTH'S HONEY-EXTRACTOR, SQUARE GLASS HONEY-JARS, TIN BUCKETS, BEE-HIVES, HONEY-SECTIONS, &c., &c. PERFECTION COLD-BLAST SMOKERS.

Apply to CHAS. F. MUTH & SON,

CINCINNATI, O.

P. S.—Send 10-cent stamp for "Practical Hints to Bee-Keepers." 1tfdb

ONE-DOLLAR QUEENS.

I will give you a printed guarantee of purity of every untested queen sent at \$1 each before Sept. 15. 14 16db J. B. HAINS, Bedford, Cuyahoga Co., O.

QUEENS.

I have them, bred from a best selected queen of Root's importation, 90 cts. each; 6 for \$4.50. I can give all orders immediate attention, and ship by return mail. Send postal for dozen rates.

10tfdb B. T. BLEASDALE, 596 Woodland Ave., Cleveland, Ohio.

FOR SALE. I will sell full swarms of Italian bees during this month for \$5.00 each; two for \$9.00, or five or more at one order

at \$4.00 each. They are in new 10-frame L. Simplicity hives, and in good winter shape, ready to ship by return express; good covers and bottom-boards go with the hives. Safe arrival guaranteed. Send money by registered letter.

Address M. R. NICHOLS, 15tfdb Weaver's Corners, Huron Co., O.

100 GOLDEN ITALIAN QUEENS.

Cells taken from colonies that have swarmed. Warranted second to none in every respect. Should any prove to have misnamed they will be promptly replaced with nice tested ones. I will ship next day after receiving order, if so desired. Price 75 cts. each; per doz., \$8.00.

15-16d JAMES WOOD, North Prescott, Mass.

PURE ITALIAN QUEENS.

Tested queens, \$1.50 each; untested, 70c each; 3 for \$2.00; 5 for \$3.00. All bred from a select imported mother. By return mail.

15tfdb D. G. EDMISTON, ADRIAN, LEN. CO., MICH.

HONEY COLUMN.

CITY MARKETS.

ST. LOUIS.—*Honey.*—We quote to-day's market on honey: Comb, choice white clover, 1-lb. sections, 10@12½c; choice white clover in 3-lb. sections, 9@11; other varieties of comb in 1 and 2 lb. sections, 8@10; broken comb, 5@7. Extracted, white clover, in tin cans, 6@7c; same in kegs, 5@6; white clover and other varieties of extracted and strained in bbls., 4@4½. Honey is moving very slowly, at even low prices. There is some demand for low grades for manufacturing purposes.

Beeswax.—Selected yellow, 25c; as it runs, 21@23c.
Aug. 11, 1886. WESTCOTT & HALL,
108 and 110 Market Street, St. Louis, Mo.

CLEVELAND.—*Honey.*—The market still continues slow and well stocked. Choice white 1-lb. sections sell at 14c with an inclination downward; as yet, however, no new honey has been sold at less than 14. New 2-lb. dulla at 12@13. Old stocks are neglected. Extracted, 6@7. *Beeswax*, 25.

Aug. 10, 1886. A. C. KENDEL,
115 Ontario St., Cleveland, Ohio.

DETROIT.—*Honey.*—The market for honey has improved a little since my last quotations. Best white, in one-pound sections, sells at 14c, and some in a small way at 15c. *Beeswax*, firm at 23c.

Aug. 11, 1886. M. H. HUNT,
Bell Branch, Mich.

MILWAUKEE.—*Honey.*—Market for honey is dull, and lower prices will have to be accepted, to sell. We will quote: Choice 1-lb. sections, white, 12@13c; choice 1½ and 2 lb. sections, white, 12@12½. Old, choice, in sections, 10@11. Extracted, choice, in bbls. and kegs, 5@6; same, in tin cans, 6@6½.

Beeswax, 24@25. A. V. BISHOP.
Aug. 11, 1886. 142 W. Water St., Milwaukee, Wis.

KANSAS CITY.—*Honey.*—The receipts of new honey are good, and demand the same. 1-lb. sections, white clover, 13@14; 1-lb. sections, dark, 10@11; 2-lb. sections, white clover, 11@12; 2-lb. sections, dark, 8@10; 2-lb. sections, California, white, 10@11; 2-lb. sections, California dark, 8@9. Extracted white clover, 5@6; dark, 3@4; California, 5@5½; dark, 4. *Beeswax*, 20@22. CLIMONS, CLOON & Co.,
Aug. 11, 1886. Cor. 4th and Walnut St's.,
Kansas City, Mo.

BOSTON.—*Honey.*—New 1-lb. sections, 13@15; new 2-lb. sections, 12@14; new extracted, 6@8. *Beeswax*, 25 cents.
Aug. 11, 1886. BLAKE & RIPLEY,
57 Chatham St., Boston, Mass.

NEW YORK.—*Honey.*—There is no change in the honey market; still, there is some old honey on hand, almost unsalable at any price. We are receiving large shipments of California white-sage honey, extracted, in 5-gallon cans, 2 in case, which is sold at 5@6c per lb. We have not received any new comb honey this far.

Beeswax, a trifle lower. Prime yellow sells at from 22½@24c. THURBER, WHYLAND & Co.,
Aug. 11, 1886. Reade & Hudson Sts., New York.

CINCINNATI.—*Honey.*—No change in the market; demand slow for all kinds and shapes of honey. Prices are nominal. Extracted honey ranges between 3½@7c per lb. on arrival, according to quality, and choice comb honey brings 14@15c in a jobbing way.

Beeswax.—Demand is good, and arrivals are fair. We pay 20c per lb. for good yellow.
Aug. 6, 1886. CHAS. F. MUTH & SON,
S. E. Cor. Freeman and Central Avenues,
Cincinnati, Ohio.

FOR SALE.—I have 400 lbs. of nice white-clover honey in 1-lb. sections, in crates containing 24 sections each, at 13c per lb., crates included, delivered on cars here. Also 50 swarms of bees, 20 in Root's chaff hive, and the rest in Simplicity hives—all very strong. J. D. STEDMAN, Charlestown, Port. Co., O.

FOR SALE.—I have 300 or 400 pounds of choice comb honey, put up in 24-lb. cases, which I will sell for 11c per lb. It is nice and white, raised with separators, and is first class in every respect.

WM. H. STANLEY, Dixon, Lee Co., Ill.

FOR SALE.—2000 lbs. clover honey in 1-lb. sections, large cases at 15c; and in small cases at 16c at our R. R. Station. O. G. JOSEPHANS,
Owosso, Shi. Co., Mich.

FOR SALE.—2000 lbs. of nice white-clover and basswood honey in 1-lb. sections, put on board cars here for 13 cts. per lb. C. ABRAHAM,
Fayette, LaFayette Co., Wis.

FOR SALE.—I should like to sell 2000 lbs. of comb honey in one and two lb. sections. I will deliver it on the cars here for 12½ cts. a pound. It is nice white honey. F. ROULO,
Portville, Catt. Co., N. Y.

FOR SALE.—10,000 lbs. of nice white-clover and basswood honey, in one-pound boxes, 48 lbs. in case, delivered on board cars for 12c per lb. by the case, or 11c per lb. in 1000-lb. lots. EZRA BAER,
Dixon, Lee Co., Ill.

FOR SALE.—Friends, I have 1500 lbs. of beautiful honey in one-pound sections, in crates holding 11 and 12 lbs., that I will sell at 12½c per lb.; also extracted honey in 50-lb. kegs at 8c, delivered on the cars. Cash with order. Reference given if needed. W. S. DORMAN, Mechanicsville, Iowa.

FOR SALE.—1000 lbs. of white-clover honey, in 1-lb. sections. What am I offered? WM. VANAUKEN,
Woodville, Jeff. Co., N. Y.

FOR SALE.—5 barrels, of 170 lbs. each, one of 250 lbs., of basswood honey, well ripened; also 2 barrels of clover honey of 170 lbs. Will take 6 cents, barrel free, delivered on cars at Lynnville. W. A. COMPTON, Lynnville, Giles Co., Tenn.

FOR SALE.—I have 1500 lbs. of comb honey for sale, 15 cts. for No. 1, 12 cts. for No. 2. NELSON DEWEY, Adrian, Lenawee Co., Mich.

FOR SALE.—10 crates of comb honey, containing 36 pounds each, in one-pound sections, ready now. MARCUS WIGHT, Bedford, Iowa.

FOR SALE.—Still having on hand in Root's beautiful 1-lb. sections some 2000 lbs. of white-clover honey, I offer the same at 14c per lb., packed in Heddon's shipping-cases, and put on board of cars. JOHN ELLINGER, Hopkins Sta., Allegan Co., Mich.

WANTED.—From 500 to 1000 pounds of white extracted honey. What is your price, delivered at Malone? H. P. LANGDON,
East Constable, Franklin Co., N. Y.

WANTED.—I have a place for a few tons of clover honey, white; can pay N. Y. quotations—5c, put up in bbls. of from 300 to 500 pounds each, F. O. B., anywhere in Ohio or this way from there. F. D. WOOLVER, Munsville, Madison Co., N. Y.

FOR SALE. PURE ITALIAN Bees & Queens.

Untested queen, \$1.00; two or more, 75 cts. each. Tested queens, \$2.00 each. Full colonies, in Simplicity hive, with tested queen, from \$4.00 to \$10.00. Three-frame nuclei, with untested queens, \$2.00; with tested, \$3.00. For July, August, September, and October, address or call on

Residence, Little Muskingum. BEN. J. J. COLE,
16d Marietta, Wash. Co., O.

FOR SALE CHEAP.

Fifty 2-story Simplicity hives, nailed and painted; 100 2-story Simplicity hives in flat, and 10,000 brood-frames. For particulars address
16d O. H. HYATT, Shenandoah, Iowa.

Pure Italian Queens.

I have purchased the entire stock of bees of Mr. L. L. Langstroth. I will sell queens from natural swarming, at 80 cents each, or six for \$4.00. Safe arrival guaranteed.

MERICK STIBBENS,
Oxford, Butler Co., O.

GLEANINGS IN BEE CULTURE.

Books for Bee-Keepers and Others.

Any of these books on which postage is not given will be forwarded by mail, *postpaid*, on receipt of price.

In buying books, as every thing else, we are liable to disappointment, if we make a purchase without seeing the article. Admitting that the bookseller could read all the books he offers, as he has them for sale, it were hardly to be expected he would be the one to mention all the faults, as well as good things about a book. I very much desire that those who favor me with their patronage shall not be disappointed, and therefore I am going to try to prevent it by mentioning all the faults so far as I can, that the purchaser may know what he is getting. In the following list, books that I approve I have marked with a *; those I *especially* approve, **; those that are not up to times, †; books that contain but little matter for the price, large type, and much space between the lines, ‡; foreign, §.

BOOKS ESPECIALLY FOR BEE-KEEPERS.

As many of the bee-books are sent with other goods by freight or express, incurring no postage, we give prices separately. You will notice, that you can judge of the size of the books very well, by the amount required for postage on each.

	Price without postage.
12 A B C of Bee Culture** Paper.....	88
15 A B C of Bee Culture** Cloth.....	1 10
5 A Year Among the Bees, by C. C. Miller**	70
11 Bees and Bee-keeping, by Frank Cheshire, England**§.....	2 36
10 Cook's New Manual** Cloth.....	1 15
2 Dzierzyn Theory**.....	10
1 Extracted Honey, Dadant*.....	14
1 Foul Brood; Its management and cure; D. A. Jones**.....	09
1 Honey as Food and Medicine.....	5
10 Langstroth on the Hive and Honey-Bee***	1 90
10 Quinby's New Bee-Keeping**.....	1 40
10 Queen-Rearing, by H. Alley*.....	90
4 Success in Bee Culture, by James Heddon*	46
10 Fuller's Grape Culturist**.....	1 40
The Apiary; or, Bees, Bee-Hives, and Bee Culture, by Geo. Neighbour & Sons, England*§	1 75
British Bee-Keeper's Guide - Book, by Thos. Wm. Cowan, Esq., England*§.....	40

BIBLES, HYMN-BOOKS, AND OTHER GOOD BOOKS.

8 Bible, <i>good print</i> , neatly bound.....	25
10 Bunyan's Pilgrim's Progress**.....	50
3 "Dose of Truth," for tobacco users.....	20
1 Ester Ried**.....	1 25
32 Fables and Allegories. The most beautiful piece of work in the way of a book that I have ever sold, and I do not know but it is the handsomest book I ever saw. It is a large-sized book of 512 pages, full of engravings of surpassing beauty. The paper and printing are probably equal to any thing in the way of a book now in the market. Our readers may ask, "What are the fables and allegories about?" Well, they are about you and me. As an illustration, in the center of the book you will find the fable of the Lantern people, which I gave on p. 345, May 15, 1885. I copied the story, but I did not have the wonderful pictures that the author has in this book. The book is written by the author of the Story of the Bible. There is but one fault to find with it; that is, it costs \$2.00. However, if any of you want a book worth \$2.00, every cent of it, you will find it in this book of fables and allegories. It will make you cry, if you don't look out; and the best of it is, that the chances are very great that you will be better after you have cried. I never saw any thing in my life, nicer for a Christmas present; or if you want a beautiful book to put on the center-table of your best room, you can not find a handsomer one for the money. Perhaps I am saying a good deal; but if you do not agree with me after you have seen the book, you can send it back and have your money returned. They are so large and heavy that the postage on them is 32 c. extra. We can sell two books for \$1.75 each; three for \$1.65 each; five or more, \$1.60 each.	

6 | First Steps for Little Feet. By the author of the Story of the Bible. A better book for young children can not be found in the whole round of literature, and at the same time there can hardly be found a more attractive book. Beautifully bound, and fully illustrated. Price 50c. Two copies will be sold for 75 cents. Postage six cents.

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2 Moody and Sankey's Gospel Hymns, words only. No. I. or No. IV., paper.....	05
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5 Same, words and music, board.....	30
5 Same, Nos. I., II., III., and IV., combined, words only, board.....	20
10 Same, words and music, board.....	75
3 New Testament in pretty flexible covers.....	05
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A large book of 700 pages, and 274 illustrations. Will be read by almost every child.

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BOOKS THAT I HAVE NEVER EXAMINED, BUT THAT ARE IN GOOD REPUTE.

American Fruit-Culturist, Thomas.....	3 00
American Weeds and Useful Plants.....	1 75
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Broom Corn and Brooms; paper, 50c; cloth.....	75
Cements and Glue.....	25
Copley's Plain and Ornamental Alphabets.....	3 00
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Harris on The Pig.....	1 50
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Money in The Garden, Quinn.....	1 50
Manual of Botany and Lessons, Gray.....	3 00
My Vineyard at Lakeview.....	1 25
Practical Butter-Book, Willard.....	1 00
Pear Culture For Profit, Quinn.....	1 00
Parsons on The Rose.....	1 50
Shooting on The Wing.....	75
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What to Do and How to Do it, in case of Accident, &c.....	50
Youatt on Sheep.....	1 00

Address your orders to
A. I. ROOT, Medina, Ohio.

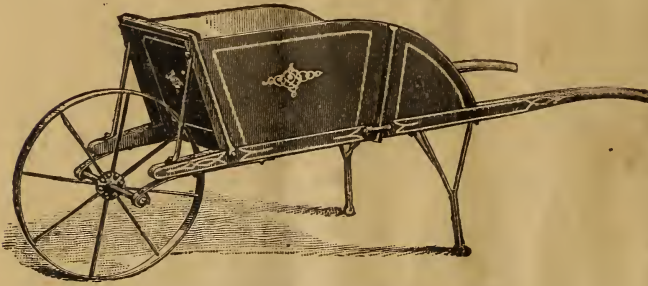
The Weekly British Bee Journal.

The British Bee Journal is now mailed to our address in packages, weekly. In order to dispose of them, we offer them at present at \$2.62 per year, postage paid, beginning January, 1886. Will guarantee safe arrival of every number.

A. I. ROOT, Medina, Ohio.

❧ A * WHEELBARROW * FOR * BEE - KEEPERS. ❧

ALSO A WHEELBARROW FOR WOMEN, CHILDREN, AND
PEOPLE WHO ARE NOT VERY STOUT.

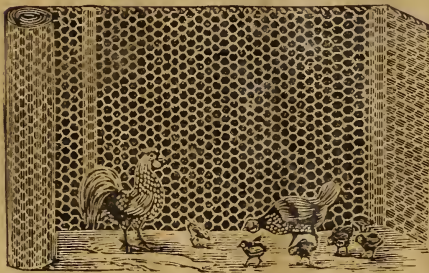


OUR 35-POUND WHEELBARROW, CAPABLE OF CARRYING 500 POUNDS.

them at their convenience, when times were dull. Well, friends, the wheelbarrows are here, and they are a surprise to everybody. We show you a picture above. We have two sizes—the smaller one weighing only 35 lbs., and yet it will carry 500 lbs. safely, and it can be packed so closely together for shipment that you can take the whole thing under your arm and walk off easily. The wheel has flat spokes instead of round. The different pieces are all cut and forged by means of dies. The legs are steel, so they will neither break nor bend, even if you bump them on the sidewalk. The springs are oil-tempered, with adjustable bearings, so you can tighten them up for wear. More than all, the wheelbarrows are the nicest job of painting and varnishing, I believe, I ever saw, for a farm implement. They are handsome enough to go around town with, and strong enough to do heavy work; and yet the price of the small size is only \$4.00, the same as our iron wheelbarrow. The larger size is \$4.50. The only discount that can be made is 5 per cent off for two; 10 per cent off for five, or 15 per cent off for ten or more. They can be sent either by freight or express. It is only five minutes' work to put one together.

A. I. ROOT, Medina, Ohio.

GALVANIZED WIRE NETTING, FOR FOULTRY INCLOSURES, ETC.



This wire netting comes in rolls 150 feet in length and 4 feet in width. This would give 600 sq. ft. of surface, and we are enabled to furnish it at the low price of one cent per sq. foot, or \$6.00 for a roll. Staples for fastening to the posts are 20 cts. per lb., and 1 lb. contains about 400 staples. About 1 lb. of these is needed for a roll of netting. The posts to hold it should be not more than 10 ft. apart, and it should be set in the ground at least 2 ft. You can put on a top rail, if you choose, but the selvage edge of the netting makes a pretty strong fence; and as the fowls can not see if they can not tell how high to fly; and after being bumped down several times they usually give it up. In putting it on the posts, draw the top of the selvage tight, and afterward draw the bottom down and fasten that. You can put a board a foot wide along the bottom, if you choose. This will prevent small chickens from getting through, and makes the fence one foot higher.

One advantage this netting has over wooden pickets is, that it does not catch the wind as they do, and therefore the posts are not so liable to be tipped over; besides it presents a very much more

ornamental appearance, as you will see by the cut. The meshes are two inches across; and where the wire crosses it is securely soldered together, for the whole fabric is immersed in melted zinc after the whole is woven together. The size of wire used is No. 19. This galvanized wire never rusts, so it will last a lifetime, unless it is damaged by careless running into it. If you want to make division fences, so as to keep different breeds from the same yard, it is better to have a board at the bottom at least one foot wide, so the fowls can not be gossiping through the wire, and pecking at one another. You will notice that one roll makes a yard nearly 40 feet square, and this is plenty large enough for 20 or 30 fowls.

Another advantage this netting has over wooden pickets is, that you can see what is going on inside so readily. The wind, also, has free access, which is quite an item during sultry weather. It should be shipped by freight. The weight of a single bale is about 50 lbs. It may be shipped from here or from New York or Chicago, as may be convenient.

If you want us to cut rolls, the price will be $\frac{1}{2}$ c. a foot extra. On two or more rolls, we can give 5 per cent discount; on ten or more rolls, a discount of 10 per cent. As the above prices are very close indeed, they can be given only when cash comes with order. This wire netting can be used in a hundred different ways for protecting anything. It makes very pretty and efficient trellises for running vines. As it is galvanized wire, the weather has no effect on it whatever.

P. S.—We keep in stock only the one width mentioned above; viz., 4 feet high, although you can have it made to order from 2 to 6 feet. The 2-foot width is just right for ducks, rabbits, etc. The price will be the same; viz., one cent per square foot. All other widths come in bales 150 feet in length. Where less than a whole bale is sold, the price will be $1\frac{1}{2}$ cents per square foot. If wanted by mail, add 2 cts. per ft.; or 15 cts. postage for 10 ft. Prices for smaller mesh, or mesh made of heavier iron, on application.

A. I. ROOT, Medina, Ohio.